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The opener of a medical discussion, like an opening batsman at cricket, is expected to exhibit the more stolid qualities of his kind; but even if I felt possessed of such attributes, I should be inclined to wonder if the time were opportune for their display. Of recent years the alleged abnormalities in the psychology of children have been so intensively studied that it might be questioned if we have not had more than enough of this solemn analysis of the ways of childhood. Children are children, it might be said; they are a race apart inhabiting a country of their own, and if they are to be haled before our own sober tribunals they become dispossessed, and if they are to be judged by our own strict standards they are in danger of being forced to accept the status of aliens or lunatics. With such views I have an uncomfortable feeling of sympathy, especially when I recall how children have ever been fair game for enthusiastic theorists. Yet a child of its own innate grace can thrive in all sorts of atmospheres and has its own way of evading all sorts of perils; and I take comfort in the thought that in every large catastrophe of which I ever read—landslide, flood, or earthquake—there is always at the apex of the heap of ruins a small baby, placid and unharmed, engaged in defiance of its medical advisers in sucking its thumb.

Even with this good omen there is a need for caution, for the present position is peculiar. The subject of child psychology, handed on from the medical profession, has turned the heads of the public, and it would be rash to say that its study has affected the imaginations of the laity alone. Widely organised efforts are being made to teach parents how to deal with their children's behaviour. When such teaching is confined to the simple sort adapted to the capacity of the uneducated, it may readily be imagined that the results, if any, are beneficial. But in the case of the educated, to whom the world's psychological literature is open, is the ultimate result going to be as satisfactory as is hoped? Already we meet parents who are tinkering at their children's psychology as they used to tinker at their insides, and it is not every mother that can imbibe with comfort the psychological hypotheses of the moment. More particularly the perpetual teaching that present troubles are the fruit of past unpreventable incidents is an uncomfortable doctrine for discerning parents, for it introduces a fatalistic note which is by no means the only sign in the psychological world of to-day of a culture alien to our own. To press such teaching indiscriminately far and wide doubtless appeals to those whose belief in it is less faltering than my own, for I confess that to me the besetting weakness of psychologists is the way in which they tend to link directly together cause and effect in a manner often too facile to be convincing. Nor do their explanations of the origin of symptoms by any means tally, though they are united in claiming good results for their several methods of treatment based on their different hypotheses. These good results may be unhesitatingly accepted; but the chief interest lies not in results but in the means by which they are brought about. I believe myself that far too little credit is given to the beneficent effects of the passage of time and the gradual development of the child. There is so much inborn in almost every child that tends to enable it to right itself, so that as time passes and new interests unfold themselves, the child quite naturally gains in sense and poise. Occasionally the alteration in a child's mental stance is sudden, as in the case of a little friend of mine, who having spent her first year at boarding-school evading the observation of those in authority, returned last September for the beginning of her second year. The glories of her enhanced position were reflected in her first letter home: "Darling Mummie," she wrote, "the school is lousy with new kids."

I shall make no attempt to define the term "difficult child." In my view the great majority of children can be included at some time or other in their lives, though I suppose that when we employ this term we are chiefly thinking of the neurotic and undisciplined, the delicate and unhealthy, and perhaps a very small sprinkling of really psychopathic children. We can therefore exclude but few children except the mentally defective and the so-called backward child. In the last-named I am no great believer; where backwardness is anything more than temporary some degree of deficiency or enfeeblement is present. This may not amount to feeble-mindedness as officially defined, but it comes within the scope of the unofficial definition of a moron. This is of so kindly and satisfying a nature that I cannot forbear to quote it: a moron, it says, is one who does the work of three permanent officials in a government office.

The subject of the care and treatment of difficult children is so closely connected with ætiological considerations that I do not see how in our discussion on the treatment of these troubles we can exclude our views on their various causative factors. In the few headings which I am putting before you as subjects for discussion I am making no attempt to keep strictly apart questions of causation and those of treatment.

ENVIRONMENT

To take first the circumstances of the home-circle and school-life, all are agreed in emphasising the importance of faults in up-bringing in the production of difficult behaviour in children, and many rely almost exclusively on their modification for the improvement in the child which they wish to effect. We are teaching the lay public that these things are in the direct relationship of cause and effect, and I cannot help wondering if we are not in danger of going further than is strictly true. If we are exaggerating, we are increasing the anxieties of parents in a most undesirable way. When we consider these reputed causative factors we are struck in the first place with their infinite number and variety. It is clear that we shall never lack explanations for any sort of behaviour in a child, and that it would need an extraordinarily happy concatenation of circumstances to enable any child to avoid contact with all these possibilities for harm. As a matter of fact we know well enough that no child ever lacks opportunities for being difficult if it is so disposed, yet what numbers of children pass them by and remain unspoiled and unspoilable. I am sure that many here possess just such children:

* Being the opening address at a discussion held by the Medical Society of London on Dec. 9th.

"if," as the mother is reported to have said, "my children were not the nicest on earth, I should be the first to notice it." Secondly, it is at least remarkable that these reputed causative factors are so often the exact opposite of each other. There is, for instance, the anxious over-indulgent mother, and the cold, neglectful, or jealous mother; there is the child whose mind is kept unoccupied and at a loose end, and the child who over-exerts to keep up with older children; there is the atmosphere of rigid overbearing discipline, and the atmosphere with no discipline of any sort; and the list of environmental faults, plus or minus, could be indefinitely prolonged. Yet to all these opposite faults is attributed a mental reaction which is fundamentally much the same in all so-called difficult children—namely, a negative unreasonable attitude which the child adopts in order to gain its own ends.

Therefore I would suggest that these faults in home environment on which so much stress is laid do not act as more than determinants, determining the nature and the time of the child's symptoms. To regard them as the *fons et origo* of the symptoms is going, I think, too far. Between the faults in environment and the symptoms they appear directly to cause, there are in reality many links, two of which are of vital importance—namely, the innate psychological make-up of the child, and its physical condition and health.

TEMPERAMENT

In the innate psychological make-up of the difficult child, conveniently called its temperament, we have, I believe, the most important single factor in the production of its troubles. About this it is impossible here to say more than that the commonest type of difficult child is the imaginative child, usually clever but sometimes too scatter-brained to appear so, whose chief characteristic is that fatigue is so readily induced in it and produces, not a healthy desire for rest and sleep, but restlessness and irritability with a danger of further exhaustion. It may be urged that in the treatment of difficult children it is no use wasting time on these inherent characteristics as we cannot alter them. This is, I think, quite true, and might well be said more frequently and more loudly than it is. But, on the other hand, the passage of time and the development of the child do vastly alter the pattern of a child's mind, usually to the advantage of everyone. Thus the old-fashioned prognostic phrase which one still has sometimes to use somewhat shame-facedly, that a child will "grow out" of its outrageous ways, seems to be a perfectly accurate forecast of what does in fact take place. We ought not to deceive ourselves that by modifying certain superficial matters in a child's life we are producing those fundamental alterations which are the natural results of growth and development.

PHYSICAL HEALTH

The effect of physical ill-health on the mentality of a child is far greater than is denoted by the lip-service paid to its importance by psychologists. Its influence may be seen in two ways. In the first place illness may profoundly alter a child's mentality and be thus the true cause of its mental symptoms. Cœliac disease is a good instance of this. Where shall we find a more negative, difficult, and impossible child than in an untreated case of cœliac disease? Yet they are all curiously alike, simulating each other in even quite small details; and recently when I had charge of one of the very few examples of sprue in an English child, I was interested to see how exactly the mentality of the cœliac child was reproduced. Another though milder example of the same thing is afforded by rheumatic infection in children. Long before overt chorea is set up the rheumatic child shows symptoms of nervous instability such as emotionalism, night-terrors, sleep-walking, enuresis, tics, and so on. Secondly, the nature of the ill-health may determine the nature of the nervous symptoms. I should say, for instance, that none of the major perversions of appetite, such as persistent refusal of food, apparently volitional vomiting, pica, and the eating of bedclothes, arise in children whose digestions are in good order, though it must be allowed that the habit may remain after the digestive disturbance has been put right. In some instances the nature of the ill-health may be obscure. The present discussion which is going on about the so-called acidosis attacks of children affords an example of this into which I do not propose now to enter.

It is not as a rule hard to recognise that a difficult child is fatigued or out of health, and if found these conditions require strict treatment however interesting the psychological picture may be. In the presence of persistent fatigue or ill-health wide allowances should be made for a child's misbehaviour on these grounds alone.

PARENTAL INFLUENCE

As parents to-day are subjected to so much criticism, in which they are only too ready to believe, it would be interesting to hear what are regarded as the most desirable attributes of a mother. For myself I should say that the first essential is that a mother should enjoy her child, regarding it neither as a nuisance nor as a rival, and still less as a nervous disease. Secondly, that her love for her child should be shown in something more unselfish, deeper, and more supporting than mere protection. The "tigress" love of the widowed mother, although we can readily understand and sympathise with it, is productive of endless difficulties. Difficult children cannot be successfully treated by superabundant protection; to borrow a term from physical medicine what they want is a process of desensitisation, so that normal stimuli do not evoke such excessive responses. There are, however, so many attributes that one would desire the ideal mother to possess that I must leave it to others to dilate upon them. Not every child wants the same sort of mother, which reminds me what excellent mothers some fathers make.

DISCIPLINE

To turn to the question of the effect of discipline on difficult children, the ideal discipline is less a matter of rules and regulations than a matter of atmosphere. This, though imponderable, can influence a child profoundly. This is one of the things in which a good preparatory boarding-school may have a great advantage over the home, and explains why so many difficult children learn to behave reasonably first at school and only later at home. The atmosphere of a preparatory school depends on the head working through the staff and senior pupils, thus forming a powerful public opinion. In such an atmosphere the child becomes gradually acclimatised, ceases to wish to be peculiar, and eventually learns (or as it thinks, chooses) to behave reasonably. In a well-run preparatory school there are but few failures in this respect.

Another advantage that a school has over the home lies in the fact that the affections are not so heavily engaged. The child is therefore watched over by someone who is neither shocked nor heart-

broken at anything it may do. Almost anything that a small child can do in the way of naughtiness will certainly have been done before without any disaster ensuing, and allowances are readily made. With the judicious use of the blind eye and an occasional unpalatable punishment, misdemeanours and scenes cease to be either advertisements or adventures, and with plenty of other interests to take their place they become dropped.

Punishments, at all events as given in the home, are not of much value in the correction of difficult children. Rewards, which I suppose are sorts of negative punishments, are slightly more useful, and general encouragement is very necessary. Nevertheless I am afraid that it is true that the more blatant difficulties do not arise in children who can rely upon getting something analogous to a sound clip over the ear if they transgress unreasonably. Although no one of us would countenance such proceedings, it cannot be denied that as a punishment this has its points: it is immediate, it is unpleasant, and it is soon over. Unreasonable children are seldom benefited by punishment as (very irritatingly) they fail to see the justice of it; but if punishment is going to do any child good (and I am not here referring merely to corporal punishment, which is hopeless for nervous children) it should be ordered in cold blood and with at least some show of reason behind it, so that the child should be left with the idea that it has been foolish to let itself in for such an unpleasant affair. It is essential that the child, having paid its price, should get its forgiveness and reinstatement. The element of disgrace should be kept at a minimum, for a child's sense of justice enables it to see that to be both punished and kept in disgrace is not fair. To keep up a continuous atmosphere of disgrace and to arrange a series of punishments by deprivation or otherwise, the scheme of things now called "sanctions," is psychologically to mishandle any child. Rest in bed is the best of all corrective measures, and may be usefully employed as a preventive to forestall outbreaks in a tired child. It may be used with little or no idea of punishment, but if meant as a punishment the confinement and isolation should be regarded as its essence. To ensure benefit from the rest the child should not be kept with nothing to think of but its misery: books should be allowed and its supply of food should not be curtailed.

PSYCHOPATHIC CHILDREN

I must say at once that I know very little about, and see almost nothing of, what I should term psychopathic children apart from some sexual cases, more distressing than serious, and the moral defective group of mental deficiency. Although I have seen many children go through phases of telling lies, stealing, running away from school, and things of that sort, they have all in the end turned out to be remarkably like other children who have done none of these things. I do not remember ever having seen what I should call kleptomania in a child, and I am certain that I have not known of a child suicide. How far this is all due to questions of classification and nomenclature I do not know, nor can I tell how numerous are children whom I should recognise as psychopathic. I take them to be of a class differing essentially from the ordinary so-called difficult child, and I presume that they require different care and treatment.

About psycho-analysis I have no practical knowledge whatever, but I am fortunate in having friends in the psycho-analytical world, and as may be readily imagined we fall to discussing these things. Psycho-analysis is in such bad odour with those of my generation that I should like at least to pay tribute to the sincerity and even the humility of a group of physicians who are attempting to approach the problems of child psychology by this route. Having said this I must in candour say that I doubt if psycho-analysis could ever be a correct form of treatment for a neurotic or psychopathic child, but I should like to think that as a method of investigation it might lead to useful conclusions to be applied in other cases without submitting every fresh child to the process of analysis. But I must confess that whether I consider the hypotheses on which psycho-analysis is based or the conclusions reached by its employment I see little to support such a hope for its future use.

CONCLUSIONS

To try to draw some conclusions from these disjointed remarks, I submit the following:—

(1) In physical medicine, in the treatment of delicate, subnormal, or unhealthy children, we adjust, modify, and correct certain details, we do our best to avoid upsets in the form of exacerbations or illnesses, and we stand by to watch the child's health right itself by natural processes in the course of time. So, I suggest, on the psychological side, we make our modifications, we avoid upsets in the form of storms and pitched battles with the child, and with time and development the child, by natural means, rights itself.

(2) The lay public has taken up the subject of child psychology with some enthusiasm, and is very ready, as usual, to exaggerate our knowledge and the value of the help that we can give. Psychologists who have so much the ear of the public just now should get this corrected for the sake of the children.

(3) Insistence on the view that so many of the children's faults are direct results of parental faults or stray accidental events may easily develop a dangerous anxiety in the minds of parents. Children have suffered enough from the mother who is over-anxious as regards their physical health; it is not pleasant to contemplate what their lot will be like when the same type of mother tackles their psychological health.

MACROCYTIC HÆMOLYTIC ANÆMIA

REPORT OF A CASE

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HÆMOLYTIC ANÆMIA appears in many guises; between acholuric jaundice and the acute type described by Lederer we may recognise an ascending series of anæmias, of increasing clinical severity. These cannot readily be classed as separate entities, since their essential features are the same. The difficulty in classification[1] depends chiefly on lack of sufficient information, and accordingly it seems justifiable to record a further case.

The importance of this group of grave anæmias appears to lie in the uncertainty of their response to various lines of treatment. Lederer's anæmia is cured by the transfusion of blood, while at the other end of the scale splenectomy for the most part cures

the acholuric jaundice. For the intervening types no certain therapy is forthcoming. Indeed, it is these intermediate cases of hæmolytic anæmia that are characterised by the failure of all available remedies.

Case Record

A woman, aged 22, was admitted to Westminster Hospital on Dec. 14th, 1934, complaining of lack of energy and breathlessness of four months' duration; her duties as a children's nurse had recently seemed more of an effort. Previously she had been of robust health and usually carried a high colour, tanning easily with the sun. As a child she had whooping-cough, measles, and chicken-pox. At 16 her nasal septum was operated upon. One year later, after a mastoid operation, she was treated at the London Homœopathic Hospital with pills for "anæmia," her face at that time being, in her own words, "the colour of cheese, but not yellow." At the age of 18, one and a half years later, she again became anæmic; treating herself by rest in bed she was soon well. One year ago she was in bed for a week with influenza.

There was no history of indigestion, abdominal pain, or vomiting. Her tongue was never sore. There were no paræsthesiæ, but her hands always had a tendency to become "dead"; her legs had never felt awkward. For the last 12 months she had noticed that if she bled from a cut her blood was "watery." No tendency to bruising or hæmorrhage. Catamenia, starting at age of 12, had always been irregular, and for the last four months had been scanty; never menorrhagia. Bowels and micturition healthy. Appetite good. Some recent loss of weight.

The patient is the older of two girls, her sister being alive and in strong health. Mother, aged 49, alive and well. Father killed in Great War. No family history of anæmia or jaundice obtainable on careful inquiry. No history of contact with toxic chemicals or of drug-taking.

EXAMINATION

Temp., 99·6° F.; respirations, 24; pulse-rate, 120. Weight, 9 st. 8¼ lb. A plump, well-nourished, intelligent girl with an obvious pallor of transparent yellow tinge, noticeable especially on the ears and palms of the hands. Mucous membranes similarly pale. Her cheeks in contrast carry a pronounced malar blush. No icterus of sclerotics. Multiple varicella scars present on trunk, and diffuse patches of pigmentation of irregular outline over lower chest. Legs somewhat hirsute; the pubic hair has a tendency towards male distribution. No petechiæ or ecchymoses. No œdema. Finger-nails normal. Tongue smooth, moist, and slightly coated. Teeth crowded, with many fillings. Gums and fauces pale but healthy.

Abdomen: Normal contour. Liver soft, not tender, enlarged 2–3 in. below right subcostal margin. Spleen firm; enlarged so that tip is just palpable without inspiration. No friction rub heard over either organ. No ascites. No tenderness. *Cardiovascular system:* Radial pulse full, with regular tachycardia; not collapsing. Arteries normal. Heart not clinically enlarged; mitral first sound reduplicated; no murmurs or other abnormality detected. No failure. Blood pressure 150/70. *Respiratory system:* Nose breather. Lungs normally resonant; air entry equal; no adventitious sounds; bases clear. *Central nervous system:* Power, sensation, cranial nerves, deep, and superficial reflexes show no abnormality. Optic fundi very pale; no hæmorrhages; edge of disc indistinct owing to generalised retinal pallor. *Urine:* Specific gravity, 1026; acid; no albumin, sugar, or bile.

PROGRESS AND SUBSEQUENT INVESTIGATIONS

The *blood counts* are shown in the accompanying Table.

Dec. 15th, 1934.—Stools: no occult blood.

Dec. 18th.—Fractional test-meal: Free acid maximum 0·005 per cent. HCl after one hour. Bile in all specimens. No blood or excess of mucus.

Dec. 20th.—After a control period of six days without treatment, daily injections of liver extract (Campolon) 2·0 c.cm. intramuscularly were started.

Dec. 21st.—Van den Bergh: Direct negative; indirect strongly positive. Bilirubin 4 units (1 : 50,000).

Dec. 28th.—Urine: no oxyhæmoglobin. Chemical tests for blood negative. Bile and bilirubin absent. Blood Wassermann and Kahn tests negative; Meinicke doubtful.*

Dec. 30th.—Campolon stopped. No change in clinical condition. Treatment by iron commenced (mist: ferri et ammon: cit: grs. 30 t.i.d.).

Jan. 3rd, 1935.—During the three weeks since admission has had a persisting intermittent fever with steadily rising pulse-rate. Pallor has increased. Pounding sensations of heart prevent sleep. Pulse now collapsing. Re-examination of heart: presystolic thrill and murmur at cardiac impulse; second sound normal at apex and pulmonary base; no diastolic murmur. Blood pressure 125/65. Lungs clear. No œdema anywhere.

Jan. 4th.—Blood transfusion (1). Group IV. 350 c.cm. citrated blood.

Jan. 5th.—Price-Jones curve: (Dr. Hawksley) M.D.= 8·1975 μ, σ = 0·6735 μ, v. = 8·2148 per cent. Megalocytosis 29·2 per cent., microcytosis 0 per cent.

Jan. 7th.—Improvement in appetite and palpitations. Blood picture unchanged. Electrocardiogram normal.

Jan. 9th.—Blood culture: (aerobic and anaerobic) no growth after six days. Blood transfusion (2) 500 c.cm. citrated blood.

Jan. 10th.—In statu quo. No clinical lessening of degree of anæmia. Late diastolic apical bruit detected.

* Dr. Pulvertaft informs me that the Meinicke reaction is frequently untrustworthy in cases of hæmolytic icterus.

TABLE OF BLOOD COUNTS

—	December, 1934.				January, 1935.										
	4th	11th	19th	31st	8th	14th	15th	18th	19th	20th	21st	23rd	24th	25th	26th
Hæmoglobin (per cent.)	45	45	..	30	T 30	T 28	T 38	T* 50	..	..	35	40	22	T 40	T 52
Red cells (mill./c.cm.)	1·54	1·57	..	1·35	1·78	1·28	..	2·03	..	..	2·39	..	..	..	..
Colour-index	1·5	1·5	..	1·1	0·9	1·2	..	1·25	..	..	1·1	..	..	..	..
White cells (thous./c.cm.)	7·4	5·1	..	8·2	7·3	5·7	..	5·2	..	..	19·0	..	..	45·5	59·9
Polymorphs (per cent.)	80	90	..	90	..	80	..	83	..	..	94	..	..	96	89
Lymphocytes ,,	13	10	..	8	..	17	..	11	..	..	5	..	..	3	8
Monocytes ,,	4	..	..	2	..	2	..	5	..	..	..	..	..	..	..
Eosinophils ,,	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Basophils ,,	1	..	..	..	..	1	..	1	..	..	..	..	..	1	3
Diameter of R.B.C. (μ Halometer reading)	8·3	8·3	..	8·5	8·1	..	..	7·1	..	..	8·1	..	..	..	..
Normoblasts (per 100 leucocytes)	..	50	..	..	..	456	..	104	..	..	Sc.	..	+	88	+ + +
Punctate basophilia	..	..	..	+ +	..	..	..	+ +	..	..	+ + +	..	..	+ +	+
Polychromasia	..	+ + +	..	+ +	..	..	..	+	+	+	+	..	0	+ +	+
Aniso- and poikilo-cytosis	..	+	..	+	..	..	..	+	..	..	+	..	..	..	..
Reticulocytes (per cent.)	..	..	60	64	40	77	..	19	..	..	< 5	0	..	..	..
Fragility of R.B.C. (per cent. NaCl)	..	..	0·38	0·35 (a)	0·45	.. (b)	..	0·35 (c)	..	..	0·55	0·35	..	..	..

(a) Platelets 300,000; Group IV.; cold fixation of hæmolysis at 37 and at 0 degrees C. absent. (b) Cabot's rings present. (c) Bleeding time 1 minute 30 seconds. T After transfusion. * Operation (splenectomy). Sc.= scarce.

Jan. 11th.—Tachycardia, splenomegaly, and pallor persist. Patient feels no better. Stools: neutral fats 1·2 per cent., free fatty acids 1·45 per cent., soaps 14·05 per cent. (per cent. by weight of dried fæces).

Jan. 14th.—Menstruating. Blood transfusion (3) 600 c.cm. citrated blood.

Jan. 16th.—Blood transfusion (4) 500 c.cm. citrated blood. Spleen now appears softer and smaller than previously.

Jan. 18th. *Operation* (Mr. C. Price Thomas).—Splenectomy under general anæsthetic (gas, oxygen, and open ether) via left upper paramedian incision. Muscles and fat seen to be of normal colour. Liver enlarged, soft, and deep red. No gall-stones present. Spleen of firm consistency; weight 29 oz.; dark in colour; no perisplenitis or adhesions; no infarcts; splenic vein not sclerosed. Blood transfusion (5) given during operation (650 c.cm. citrated blood). Pulse-rate kept below 140 per minute; six hours later fell to 104 where it remained steady.

Jan. 19th.—Retained her colour; condition good; feeling better.

Jan. 22nd.—Clinically more icteric. Sclera definitely jaundiced. Pulse-rate, 120. No cardiac murmurs now audible.

Jan. 23rd.—Very pale and of greenish hue. Drowsy. Temperature and pulse-rate rising. (T. 103°; P. 130–140.) Pulse rapid; low tension. Lungs clear; no basal congestion. Wound appears healthy. No œdema. No complaint of pain. Tongue moist and clean. Bowels open naturally.

Jan. 24th.—Worse. Much air-hunger; respiration-rate 35 per minute. Pallor extreme. Drowsiness marked. Wound edge reddened and apparently infected. Rapidly lapsing into state of coma. Thought to be bleeding internally. Sod. citrate (30 c.cm. 30 per cent.) given intramuscularly as a hæmostatic, together with blood transfusion (6) 450 c.cm. citrated blood. Immediate improvement in general condition and fall in temperature to 98·4° took place.

Jan. 25th.—Condition remained better for next twelve hours; able to take fluids well by mouth. Sudden rapid deterioration then occurred, with increased drowsiness. Blood transfusion (7) 500 c.cm. citrated blood given with further intramuscular injection of 30 per cent. citrate. Urine contained albumin and blood.

Jan. 26th.—Incontinence of urine and fæces. Streptococcus grown from abdominal wound. Sutures accordingly cut for purpose of drainage; thin sanious discharge containing fat droplets seen in wound. No degree of local inflammatory reaction present. (T. 102–104°; R. 25–40; P. 130–160.)

Jan. 27th.—Died at 7.45 A.M. in deepening coma.

POST-MORTEM FINDINGS

Autopsy was performed by Dr. R. J. V. Pulvertaft. The body was well-covered and fat rather than wasted. Skin pale and jaundiced. Scars on legs, arms, and abdomen of recent surgical operations. Body-fat pale yellow, in marked contrast to red muscles. Heart small. Weight 10 oz. Right auricle much dilated. Valves normal. Aorta normal. No subpericardial or subendocardial hæmorrhages. Endocardium pale. No tabby-cat striation. Lungs small (right 16 oz., left 13 oz.). No hæmorrhages beneath pleura. Slight basal congestion both sides. Fibrin reaction on dome of left diaphragm, with a little serous fluid in left pleural cavity.

Abdomen: No free blood found. Excess of free serous fluid present containing fat droplets. Intestines adherent in pelvis and round wound by recent fibrin. Peritoneum glistening, with no definite inflammatory areas. Subperitoneal hæmorrhages along free border of ileum. Two spleniculi at tail of pancreas, the largest, size of pigeon's egg, much infarcted. Site of wound appeared healthy. Mesenteric lymph glands normal. Hæmolymph glands in aortic group. No hæmorrhage into lumen of bowel. Stomach normal. Liver pale in colour; weight 60 oz., free iron reaction positive. Gall-bladder contained very dark bile, but no calculi. Kidneys small, pale, and fatty; weight of each 5 oz.; no clear line of demarcation between cortex and medulla; capsule stripped easily; free iron present.

Bone-marrow (shaft of right femur) very deep red suggesting great activity.

HISTOLOGICAL REPORT

Spleen removed at operation during life showed no undue fibrosis, and no siderotic nodules. It was intensely engorged, giving marked diffuse reaction for free iron. No infarct present. Splenunculus contained infarcts crowded with Gram-positive cocci. Liver: Acute yellow atrophy. Little normal hepatic tissue remains. Diffuse free iron reaction. Kidney: Glomerular infarcts of Gram-positive cocci. Slight free iron reaction. Bone-marrow: Intensely cellular. Many nucleated red cells. Other elements not recognised. Heart: Normal. No free iron reaction.

Discussion: Diagnosis

Davidson[2] has collected nine cases resembling both pernicious anæmia and acholuric jaundice which do not fit accurately into either group, and has classified them from the causal factor, which was either known or unknown. The present case resembles his second group, since no ætiological factor was discovered. Although there is a history of mastoid operation and, in the terminal stages, a streptococcal infection of the wound occurred there is not sufficient concrete evidence here to attribute the whole course of the anæmia to infection, a factor considered by other writers[3 4 5 6 7] to be of great importance in the ætiology of acute hæmolytic anæmia. This, they contend, is supported by the presence of pyrexia; however, Joules and Masterman[8] attribute the fever to the active regeneration of blood. It is also well recognised that cases of severe anæmia tend ipso facto to be febrile. The presence of a blood infection was indeed considered here, but the absence of embolic lesions and a negative blood culture did not give support to this view, despite progressive changes in the heart sounds, a phenomenon which has been observed before[9] in association with severe anæmia. The question of a chronic infection of the portal tract is discussed at the end of this paper.

On admission the condition merited the diagnosis of pernicious anæmia; incompatible with this, however, were the subsequent findings of free gastric hydrochloric acid, a high and rising reticulocyte count with a falling erythrocyte count, and a negative response to liver treatment. Chronic poisoning by lead,[2] arsenic,[7] and zinc[10] have caused anæmias with similar features, but in this case there was no evidence of metallic intoxication. Finally, the somewhat indefinite story of preceding bouts of pallor raised the question of acholuric jaundice. Although no hæmatological tests were carried out on her direct relatives a detailed history revealed no familial taint; the heredity of this condition is well established.[11 12] From the main features, therefore, this may be considered to be a chronic form of the acute hæmolytic anæmia of Lederer, but, unlike the acute disease, blood transfusion did not cause a remission.

BLOOD PICTURE

The presence in the blood of normoblasts and reticulocytes in large numbers, indicating active hæmopoiesis, together with a progressively falling hæmoglobin value and red cell count, and a positive indirect van den Bergh reaction in the serum, indicated that blood destruction was proceeding at an even greater rate than blood formation. Autohæmolysins were however not present in the serum.

The mean diameter of the erythrocytes was above normal, a finding which agrees with previous reports,[2 6 34] but fails to confirm the statement of O'Donoghue and Witts[5] that megalocytosis is not

present in acute hæmolytic anæmia. A possible explanation of the megalocytosis here would be that the diseased liver, known to be enlarged initially and seen after death to be grossly pathological, was preventing storage and utilisation of the anti-anæmic principle, although one would expect liver therapy to have been effective if this were the case. The mean diameter of the red cells was unaltered by splenectomy and transfusion, which tends to occur in acholuric jaundice.[35]

The constantly high colour-index agrees with the majority of recorded cases,[2 5 6 36] yet cases of a hypochromic type have been published.[4 15] It is of interest to note that in acholuric jaundice the colour-index, which characteristically is high,[16] falls during severe hæmolytic crises.[2]

The pronounced polymorphonuclear leucocytosis which occurred after splenectomy may be regarded as mainly physiological, since it is a regular sequela of this operation. The leucocyte count previously had been on the low side of normal. Lederer's original cases [7 3] were characterised by a frank leucocytosis, but more recently similar cases have been reported [4 8] in which this was not a feature. In acute hæmolytic anæmia the white cell count may so resemble that of acute leukæmia [24] that differential diagnosis is difficult; the picture is sometimes complicated by the presence of a large percentage of immature cells.[6] No primitive cells of the granular series were seen in the present case; but an Arneth count was not made, and therefore no information is available on the age of the polymorphs. A terminal rise in leucocytes has been recorded in similar cases of this form of anæmia by Shackle [25] and following splenectomy by Davidson (Case 6 [2]).

PATHOLOGY

The absence of local inflammatory tissue reaction in the wound made it unlikely that wound infection was here responsible for the excess of polymorphs in the peripheral blood. If we were to ascribe the leucocytosis to the streptococcal wound infection we would also have to dismiss the possibility of correlating this finding with that of acute necrosis of the liver, which pathologically resembled closely the picture of acute yellow atrophy in all but reduction in size of that organ. Patients suffering from acute yellow atrophy are usually found to have an appreciable leucocytosis,[26 27 28] and this is stated to be characteristic.[29] The association of acute diffuse hepatic necrosis with secondary streptococcal infection has frequently been confirmed.[30 31 32 33] The action of agencies damaging the liver is aggravated by bacterial infection, so that it seems probable that the infection was here the primary agent causing terminal necrosis of the liver and a leucocytosis indirectly. In Lederer's cases [3] the liver was histologically normal.

The acute onset of collapse with urgent symptoms of blanching, rising pulse-rate, and air-hunger, temporarily relieved by blood transfusion, are difficult to explain in the absence of hæmorrhage. Similar symptoms are reported [28 29] in association with acute hepatic failure, and it may well be that this was a case of chronic diffuse infection of the portal system, with hepatitis and splenitis, ending in an acute exacerbation. It is reasonable to suppose that this infection was responsible for the earlier features of the case by inducing the hæmolysis and the other blood changes due to inability to utilise hæmatinics. Attractive as this theory is, the question of diagnosis must finally remain in some doubt. A dogmatic diagnosis is impossible without some speculation and theory, since the evidence is insufficient to permit of further differentiation. It therefore rests between a hæmolytic anæmia due to chronic infection and acholuric jaundice; the points in favour of each have already been discussed.

TREATMENT

The effect of blood transfusion in hæmolytic anæmias in the opinion of Parsons and Hawskley [6] is to supply some missing factor to and at the same time to rest the over-active bone-marrow. The disappointing result of transfusion in the present case, which also occurred in three of Davidson's cases,[2] must not be confused with the fatal termination which sometimes [12] takes place in acquired acholuric jaundice after transfusion. In view of the presence of autohæmolysins in the latter Whitby and Britton [13] advance a special caution against the transfusion of these patients, which may be followed by severe hæmolytic crises; this, indeed, is the probable explanation of Payne's case [4] of acute hæmolytic anæmia ending fatally after transfusion. It is interesting to note that Christiansen [14] considers transfusion probably unnecessary in the more benign cases of acute hæmolytic anæmia, which tend to recover spontaneously. The effect of repeated transfusions in the present case was no more than temporarily beneficial, this being due solely to the elevation of the hæmoglobin level which was unable to be maintained owing to the persistence of the active hæmolytic process.

The negative response to parenteral liver extract is described by several authorities [2 3 5 8 15] and appears to be characteristic. In the present case the reticulocyte count (60–70 per cent.) was unusually high even before liver therapy was started, and no change was observed during further treatment with liver. This again is in accordance with previously reported cases.[1 2] In the acute Lederer type a figure of around 10 per cent. is usual.[1 3]

After the failure of treatment by liver and blood transfusion it seemed reasonable next to advocate splenectomy on the assumption that the correct diagnosis was acholuric jaundice, in which removal of the spleen is usually followed by improvement.[1 12 16 17 18] The course of the disease, however, was little affected by splenectomy, although a marked reduction was observed in the reticulocyte count; very similar results have been recorded in this type of anæmia by Davidson,[2] and the diagnosis, rather than being confirmed, became even more obscure.

FRAGILITY

An unusual feature to which allusion has still to be made was the normal fragility of the red blood-cells, save for a slight increase after splenectomy for one reading only. In acholuric jaundice the fragility is usually but not invariably increased. According to Hillier [19] it is the range of fragility that is typically increased in that malady. A normal fragility occurs in 10 per cent. of cases.[20] The effect of splenectomy on the fragility is to leave it unchanged or to diminish it,[16] but cases are reported [18 21] in which it is increased. Dawson [12] concludes that in acholuric jaundice the fragility is variable and not parallel with the severity of the anæmia, jaundice, or splenomegaly. In acute hæmolytic anæmia, on the other hand, the resistance of the red cells is often normal but may be lowered in the active phase of the disease and return to normal on recovery. Unless the red cells are washed free of plasma before testing, this undue fragility may not become

apparent.[5] Recently Whitby and Hynes[22] have stressed the advantages of a quantitative technique (Simmel's modified) in the investigation of fragility. According to them capillary blood is subject to extraneous variations, and therefore exceedingly delicate refinements are of no value. Blood from venepuncture is more constant and should be used. Since the simple qualitative test and not the above technique was employed in the present series no deductions can be drawn. This technical factor may explain the apparent discrepancy of opinion that prevails with regard to fragility in hæmolytic anæmia.

It has been suggested[23] that the reticulocyte is more fragile than the mature erythrocyte. In an attempt to explain the normal fragility in the present case it was held that the reticulocytes were possibly *less* fragile than the red cells and, being present in large numbers, would tend to mask the possibly increased fragility of the latter. The opportunity afforded by these conditions was seized and a series of experiments on the fragility of the reticulocytes was carried out by Dr. Pulvertaft and myself in an endeavour to solve the problem. It was interesting to note that our results agreed completely with the conclusions of Whitby and Hynes that the reticulocytes and red cells are of equal fragility.

Technique.—Blood was taken from the ear into reticulocyte fluid † and allowed to remain for 15 minutes. The cells were then spun down and re-emulsified in 0·9 per cent. saline. They were then suspended in solutions of sodium chloride at varying concentrations down to 0·3 per cent. NaCl and examined under a coverslip with a one-twelfth. At intervals of 10 minutes counts were made of reticulated and non-reticulated cells. Actual lysis of cells was also observed under the microscope. No increase of fragility of either cell was noted. Suspensions in dilute saponin were also made. Lysis was here too quick to enable a differential count to be taken.

SUMMARY

A case of subacute hæmolytic anæmia of undiscovered ætiology is described in a girl of 22 years. Treatment by liver, iron, blood transfusion, and splenectomy all failed in turn to improve her condition, and a terminal streptococcal infection complicated the final picture. The fragility of the red cells was normal. The autopsy finding of acute necrosis of the liver is unusual. The case is discussed with special reference to pathology, blood changes, diagnosis, and treatment, and the literature is reviewed. A short digression on fragility is included. The probable cause of the anæmia was thought to be either acholuric jaundice or an infective process.

My thanks are due to Dr. W. E. Lloyd for permission to publish this case, to Dr. R. J. V. Pulvertaft for pathological investigations and the post-mortem report, and to Dr. L. E. H. Whitby for suggestions and helpful criticism.

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† Sod. citrate, 2 per cent. Sod. chloride, 0·29 per cent. Brilliant cresyl blue, 0·3 per cent.

DIAGNOSIS OF VITAMIN-C SUBNUTRITION BY URINE ANALYSIS

QUANTITATIVE DATA—EXPERIMENTS ON CONTROL SUBJECTS

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IN a previous communication[1] a method was outlined for investigating the "state of vitamin-C nutrition" of the human subject. The method depends on measurements of the amount of vitamin C excreted in the urine, as determined by a simple chemical titration. Tests were carried out on scorbutic, undernourished and normal subjects, and it was shown that a low urinary output of vitamin C, together with a low response after a test dose, went parallel with the history of vitamin-C underfeeding. In discussing the quantitative aspects of these tests, it was concluded:—

Thus while it seems true that a presumption may fairly be raised that an infant is below the "vitamin standard" if it excretes less than, say, 1 mg. of vitamin C per day, we think a confirmatory test to determine the degree of saturation by the "test dose" method is always necessary; and for this purpose a routine dose of, say, 100 mg. may be suggested provisionally as suitable for an infant at the age of weaning. For an adult of average weight a dose of about 600 mg. seems suitable, and for children pro rata according to the body-weight. The response will vary according to the "state of saturation" of the subject, depending on the amount of vitamin C in his past diet. If the test dose causes no appreciable response—indicating a low degree of saturation—further information may be obtained by giving a second dose the next day, in order to distinguish between severe and

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more moderate degrees of vitamin deprivation. An individual suffering from a more advanced condition of avitaminosis will require the administration of a number of such doses before a state of stable saturation is finally brought about, while with lesser degrees of deficiency saturation is more readily brought about. Details of these more quantitative aspects of the test we propose to elaborate in a later paper.

During the past year tests have been continued to obtain fuller data on the points raised in this last paragraph, and we are now in a position to formulate our results and recommendations in a more standardised quantitative form.

It deserves to be stressed at the outset that the test does not set out to measure an "all or nothing" effect—that is, it does not entitle one to say that a person is either "saturated" or else "unsaturated"—rather it measures a *degree* of response or saturation, which in practice is found to be closely graded in proportion to the past dietary intake of the vitamin. It might perhaps have been imagined that variations between individual subjects would be so great as to affect the delicacy of the method; in actual experience, however, we have been encouraged to find how close is the agreement in response as between duplicate subjects receiving the same treatment. Our present results confirm the conclusion that a suitable test dose is of the order of 600 mg. for an adult—or, for greater precision, we would suggest fixing it at a standard level of 700 mg. of ascorbic acid per day per 10 st. of body-weight. Results on children appear to come well into line with those on adults, if calculated on a body-weight basis.

During the course of the work we have also taken the opportunity to examine the question of the specificity of the titration method as a measure of the vitamin C in the urine. Various other technical points of procedure have also come up for review.

SPECIFICITY OF METHOD

The question as to whether the method used is specific for vitamin C, or whether it may also measure traces of other substances present in urine—thiosulphate [2] or possibly ergothionine [2]—is often raised. We believe, however, that in the present connexion this is of academic rather than of practical interest; for in practice the titre falls as vitamin C is excluded from the diet and when the vitamin is restored to the diet it rises to a given predictable figure dependent on the amount of vitamin fed during the period in question. In other words the method is adequate for the purpose for which it is recommended, namely, as a simple and rapid method suitable for clinical investigations.

We thought it of interest, nevertheless, to carry out some measurements to determine the amounts of the "trace" substances present in urine which may theoretically reduce the dye, although they do so more slowly than vitamin C. For this purpose three methods have been used: (1) Eekelen's mercuric acetate method,[2] and (2) and (3) two new methods devised in the Nutritional Laboratory at Cambridge. The latter two methods depend, respectively, on the peculiarly rapid destruction of vitamin C on aeration in presence of a catalyst,[6] and on the very rapid rate of decolorisation of the dyestuff by ascorbic acid—e.g., under suitable conditions ascorbic acid causes the reduction of about 50 per cent. of its stoichiometrical equivalent of the dye within about 4 seconds, whereas the corresponding figures for thiosulphate, &c., are very small. The details of these methods will be published separately, but it is sufficient to say for the moment that in our experience the "non-specific" reduction titre due to substances other than vitamin C (as measured by the Eekelen method) does not normally rise above an equivalent of about 3–6 mg. per day, out of the total of 20 mg. for the average "vitamin-C titre" of a "normal" subject kept on moderately low vitamin-C intake (or about 40 mg. for a more liberal intake, or, say, 200 mg. for the titre after a test dose, or 10 mg. for a subject receiving a diet so low in vitamin C as to be approaching the border line of adequacy).* For illustrative results see Table I.

TABLE I

Vitamin-C titration values, corrected and uncorrected

A.—Uncorrected titration value.
B.—Corrected titration value according to Eekelen's method.

Subject.	(A) mg. per day.	(B) mg. per day.
S. N. R.	18	12
G. G. G.	11	7
S. A. C.	10	7
A. W. D.	7	5

The remaining figures cited throughout the body of the paper accordingly refer to the results obtained by the simplified method already described [1]—i.e., titration against 2 : 6-dichlorophenolindophenol in acid solution to an end-point reached within two minutes. The values so obtained are expressed in terms of milligrammes of ascorbic acid.

Experimental Findings

THE RESPONSE AFTER A TEST DOSE IS GRADED IN PROPORTION TO THE "RESTING LEVEL"

Results to be cited below show how the day-to-day excretion—the "resting level"—depends on the past intake. Some preliminary values given in Table II. illustrate how this resting level in turn

TABLE II

Relation between resting level and response to a given test dose

(C)—Resting level. Mg. of ascorbic acid excreted daily, before test dose.
(D)—Response after test dose. Mg. of ascorbic acid excreted in 24 hours after administration of 600 mg. of ascorbic acid.

Subject.	(C)	(D)
A. W.	33	161
L. J. H.	17	122
A. W. D.	15	50
S. N. R.	14	35
G. G. G.	8	17

decides the magnitude of the response after a test dose. Above a certain critical resting level (about 15 mg. under the conditions of Table II.) the response rises sharply.

It might be argued that since the response to a test dose is so clearly related to the resting level, the latter alone might be used as an index of the state of vitamin-C nutrition. The advantage of the test dose technique, however, is that it magnifies the relatively small differences seen on the scale of the "resting level," and, more especially when the latter is subnormal, or in the "borderline" region of about 10–15 mg., it enables a more sharply defined decision to be reached.

It should be clearly understood, however, that the term "resting level" here used refers to a *steady state of equilibrium*, such as is brought about when a regular amount of vitamin C has been taken for some time past, the vitamin being then excreted at constant rate. Misleading conclusions might otherwise be drawn. For example, if a large test dose has recently been given, a condition of relative saturation may be produced tem-

* There is no evidence that the rise in vitamin C in the urine, caused by large amounts taken per os, is accompanied by any increase in the "non-specific" reduction value; indeed, the presence of large amounts of vitamin C itself in the urine under these conditions has been proved biologically by direct feeding tests.[7]

porarily, and so the effect of a further test dose will then be disproportionately high.

NEED FOR REPEATED TEST DOSE WHEN "RESTING LEVEL" IS LOW

To obtain a better indication of the responses of subjects with low vitamin-C "reserves," say with resting level below 15 mg. (who show little peak after a single test dose of 600 mg.), it is helpful to repeat the test dose on one or more further days. Under such circumstances subjects who have been longer deprived of vitamin C are found to take longer to reach a given state of "saturation" than do those in a less advanced condition of hypovitaminosis. Also we have found it an advantage to give a somewhat higher test dose than that employed in these preliminary trials. Further data illustrative of these points are given in Table III. Continued observations (see later Tables and Figures) have indicated that a suitable magnitude for the test dose is, as stated in the introduction, 700 mg. per 10 st. body-weight.

TABLE III

Responses of subjects with moderately low "reserves"

Subject.	Resting level.	Response after test dose of 600 mg. per day.		
		1st day.	2nd day.	3rd day.
S. N. R. ..	18	16	109	—
G. G. G. ..	11	11	9	—
S. A. C. ..	10	10	10	75
A. W. D. ..	(7)	(19)*	(97)*	—

* This subject, aged 21 and weighing 8 st., was peculiar in giving abnormally high responses to test doses both in this and in subsequent tests (cf. Table V.).

QUANTITATIVE DATA: FEEDING EXPERIMENTS ON ADULTS

A series of experiments has been carried out to measure the effects of varied known intakes of vitamin C upon the urinary data. Two examples may be chosen to illustrate the results. In the experiment summarised in Fig. 1, subjects with varying subnormal "reserves" were first submitted to a test dose, and then given daily graded doses of vitamin C (as supplements of orange juice) for several weeks. The experiment was planned so that those subjects with initial low reserves received the larger doses while those with initial higher reserves received the lower. At the end of the period it could be shown that the treatment had had the expected effect, for the order of the "reserves" had become reversed in a striking manner; those who were originally low and had received the larger doses of vitamin C were now highest, and vice versa (Fig. 1). The day-to-day totals are given in Table IV., from which it will be seen also that at the end of the

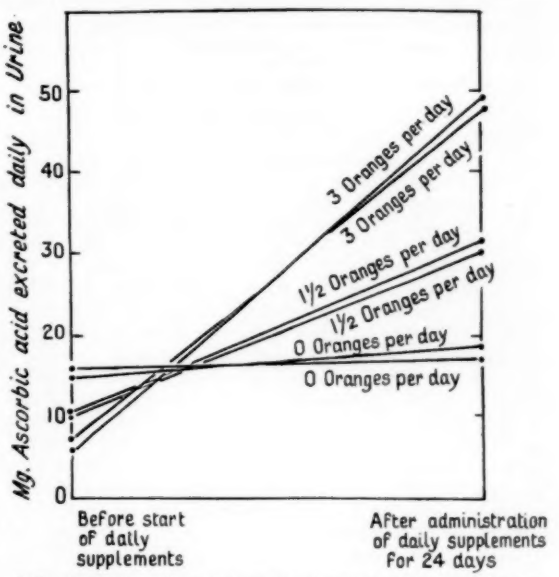

FIG. 1.—Effect of graded doses of orange juice on the day-to-day excretion of vitamin C in the urine. (The orange juice was titrated daily to determine its vitamin C. Average value, approximately: 90 mg. ascorbic acid for 3 oranges: 45 mg. ascorbic acid for 1½ oranges.)

TABLE IV.—EFFECTS OF GRADED LEVELS OF VITAMIN-C DOSAGE ON URINARY EXCRETION

I.—Vitamin-C supplement in diet. II.—Daily output in urine.

Date in 1935.	L. J. H.		M. S.		M. A. A.		S. A. C.		G. G. G.		A. W. D.		Comments.
	I. mg.	II. mg.	I. mg.	II. mg.	I. mg.	II. mg.	I. mg.	II. mg.	I. mg.	II. mg.	I. mg.	II. mg.	
May 17	..	11·7	..	16·0	..	12·0	..	5·1	..	6·4	..	5·2	Pre-experimental period.†
,, 20	..	9·2	..	12·6	..	9·7	..	7·7	..	6·0	..	2·9	—
,, 21	..	9·1	..	10·5	..	7·4	..	6·0	..	6·6	..	7·0	—
,, 22	..	6·8	..	..	..	6·6	..	8·2	..	7·0	..	3·9	—
,, 27	..	5·2	..	14·2	..	9·3	..	6·5	..	7·0	..	3·5	—
,, 28	840	17·5	630	107·6	700	10·6	700	25·4	700	12·1	560	9·6	Test dose (700 mg. per 10 st. body-weight).
,, 29	840	145·0	0	60·9	700	79·7	700	116·7	700	5·1	560	101·0	
,, 30	840	291·2	0	22·5	700	263·4	700	80·0	700	26·5	560	59·4	
,, 31	..	50·0	..	..	..	45·8	..	70·4	..	13·9	..	6·6	—
June 3	..	15·4	..	10·4	..	15·3	..	13·9	..	9·8	..	8·5	—
,, 4	..	15·0	..	15·2	..	18·9	..	14·1	..	10·7	..	8·1	—
,, 5	..	16·1	..	13·9	..	10·7	..	10·6	..	7·7	..	6·7	—
,, 18	0	11·6	0	..	45	10·4	45	10·0	90	6·6	90	9·0	Daily supplements (given as orange juice).
,, 19	0	16·4	0	..	45	11·5	45	8·6	90	11·1	90	6·4	
,, 27	0	11·1	*	50·6	45	12·1	45	24·7	90	32·4	90	50·6	
,, 28	0	13·1	0	36·0	45	12·1	45	21·6	90	20·9	90	34·0	
July 4	0	..	0	38·2	45	40·8	45	30·2	90	25·0	90	55·9	
,, 5	0	..	0	19·0	45	26·3	45	31·6	90	33·2	90	52·4	
,, 8	0	10·3	0	..	45	..	45	..	90	..	90	..	
,, 9	0	17·1	0	..	45	..	45	..	90	..	90	..	
,, 11	0	17·1	0	..	45	22·0	45	37·1	90	53·6	90	50·3	
,, 12	..	17·5	..	..	..	31·8	..	30·6	..	48·2	..	49·8	Orange juice discontinued. Test dose administered.
,, 16	840	109·5	630	95·8	700	120·1	700	127·2	700	128·3	560	130·4	
,, 17	..	35·0	..	33·2	..	33·9	..	36·1	..	33·8	..	33·9	—

* Large amount of strawberries eaten.
† During the pre-experimental period (and until June 3rd) precautions were not taken to protect the urine from the action of light; the values shown accordingly tend to be under-estimates (*vide supra*).

experiment the *effects of the test doses* were now likewise graded in order of the treatment given—i.e., in reverse of the original order.

EXPERIMENTS WITH MINIMAL DOSES OF VITAMIN C

The experiment just recorded shows that the addition of approximately 1½ oranges a day (more accurately 45 mg. of ascorbic acid daily) to a diet otherwise containing little vitamin C was sufficient to raise the daily excretion to the fairly high level of about 32 mg. per day—that is, about half as high again as a standard "average" value of about 20 mg. per day which we find characteristic for most of the normal subjects in this country whom we have examined (excluding liberal fruit eaters). It was therefore of interest to determine the amount of vitamin C needed to raise the vitamin-C excretion to a smaller extent and bring it near the "standard" level. In the experiment recorded in Fig. 2 a group of five subjects with originally subnormal reserves (markedly so in the case of three, S. A. C., G. G. G., A. W. D., whose diets were almost devoid of fruit and vegetables) were continued on their "basal diets," which were still arranged to contain the same meagre allowances of vegetables and fruit, and given a supplement of approximately ½ orange daily—viz., 15 mg. of ascorbic acid, accurately determined by titration. As will be seen (Fig. 2) the result was that after a few weeks all the subjects had reached the same level of equilibrium, and were now excreting about 15 mg. daily. This experiment illustrates very strikingly the agreement in urinary response between duplicate subjects receiving the same treatment for a sufficient length of time. The same agreement is apparent also in the effects of the test doses given at the end of the experiment (see Table V.).

TABLE V

Administration of minimal daily supplement of vitamin C: effect on urinary excretion and response to test dose

—	Mg. of ascorbic acid (uncor.) excreted per day.				
	L. J. H. (12 st.)	M. A. A. (10 st.)	S. A. C. (10 st.)	G. G. G. (10 st.)	A. W. D. (8 st.)
Daily excretion of vitamin C before experiment (Sept. 30th–Oct. 2nd)	11·8	12·7	8·8	8·3	8·0
Daily excretion of vitamin C after experiment (Nov. 11th to 18th): 15 mg. of ascorbic acid added to diet from Oct. 5th onward in form of orange juice	16·2	15·0	15·5	15·7	15·8
Effect of test dose (700 mg. per 10-st. body-weight, Nov. 19th)	55·5	42·5	42·7	41·1	81·8*

* Subject who shows abnormally high response (cf. Table III.)

CORRELATION BETWEEN URINARY DATA AND MINIMAL VITAMIN-C NEEDS OF MAN

Göthlin and other clinical observers have attempted to determine the smallest amount of vitamin C needed to prevent the earliest prescorbutic symptoms. One method depends on the fact that with a lowered intake of vitamin C the capillary resistance may become subnormal, and then the smallest dose of vitamin C may be determined which is needed to restore the capillary resistance again to the normal figure. Göthlin has carried out such surveys on large numbers of individuals; on the basis of this and of other methods of calculation a fair measure of agreement has been reached by several independent observers and the conclusion arrived at that an adult needs about 25 mg. of ascorbic acid daily to prevent the slightest objectively determined prescorbutic ill-effects.[3] Now in the experiment shown in Fig. 2 a basal diet containing only mediocre amounts of vitamin C was supplemented with the small allowance of 15 mg. of ascorbic acid (½ orange) daily; in the case of two subjects at least (G. G. G., S. A. C.) the basal diet contained no fresh fruit and

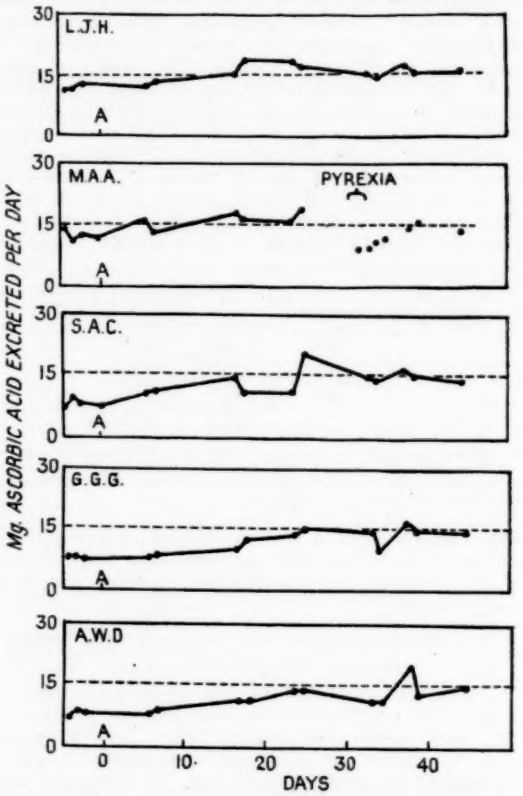

FIG. 2.—Effect of addition to diet of minimal daily dose of vitamin C (15 mg. = ½ orange, approx.) in raising the daily excretion. At the start, three subjects in particular—viz., S. A. C., G. G. G. and A. W. D.—had markedly low "reserves," their diet being almost free of fruit and vegetables, and their daily excretion being only 7 to 8 mg. per day. At "A" the small daily addition of orange juice was made to the diet. The result was that in the course of three to four weeks all the subjects had reached the same steady equilibrium, and were now excreting at the rate of 15 mg. per day. For results of test dose at end of experiment, compare Table V. The effect of pyrexia is seen in the curve for M. A. A.

no vegetables, except for small provisions of cooked potato. Few would hold that such a diet contained any large excess over the reputed optimum daily requirements of the vitamin. Now it was clearly shown that such a regimen results in equilibrium being attained with the daily excretion of a titre of 15 mg. per day (i.e., uncorrected, expressed as ascorbic acid).† On this basis, then, we may argue that if a subject excretes less than, say, 10 mg. per day, uncorrected titre—to take a still more conservative estimate—it seems legitimate to raise a presumption that his diet has been unduly low in vitamin C, and probably has contained less than the reputed optimum allowance of vitamin C (*ca* 25 mg.).

† At these very low levels of excretion, as already indicated, a significant portion of the titre may in reality be due to the residue of reducing substances other than vitamin C, but the validity of the experimental findings is not thereby affected.

Experiments are at present in progress on adults in which diets, *strictly* deficient in vitamin C, are being supplemented with no more than the reputed bare minimal dose of vitamin C and the corresponding urinary data measured. These should confirm the previous conclusion under more meticulously precise experimental conditions.

The next need is to confirm these relations between the "*reputed* minimum" dose and the urinary excretion by direct clinical observation in mild scurvy. The urinary excretion should be examined at a stage when, following the continuous administration of moderate doses of vitamin C, equilibrium has been attained and the diminished capillary resistance, or other symptoms, have been almost but not quite brought to an end.

DATA FOR NORMAL INFANTS

Calculating on a body-weight basis, and taking the "minimal" and "normal" excretion values for a man of 10 st. as about 10 and 20 mg. per day respectively, the corresponding figures for an infant of about 1 st. may be calculated as about 1 mg. and 2 mg. per day respectively. These figures are borne out by the data given in Table VI. These values relate to infants receiving in addition to their main diet the daily dose of a commercial concentrated orange juice "as recommended by the makers" (see below).

TABLE VI

Vitamin-C excretion of normal infants and response to test dose

Initials.	Age. Y. M.	Mg. of ascorbic acid excreted in 24 hours. Before test dose.	After test dose of 100 mg. of ascorbic acid.
B. J. ..	1 0	0·5	1·3 +
C. R. ..	1 10	1·1	1·5
B. A. ..	1 2	1·7	3·7
S.	1 4	2·0	2·0 + +
W. D. ..	1 0	2·6	12·4 + +
R. K. ..	1 2	2·8	41·0 + +
B. P. ..	1 6	5·5	28·0
G. M. ..	1 7	10·7	50·0

+ Indicates that true value was higher than that shown : some urine being lost. Y.M. = years and months.

It will be seen that in nearly all cases the excretion was not lower than the expected minimum level of 1–2 mg. per day; moreover the effect of test doses was well graded, in proportion to the resting levels. These findings with normal infants may be contrasted with the negligible excretion found for scorbutic infants [1] and their failure to respond to test doses [1]; after cure they excreted at a normal rate and gave good responses.

A very considerable variation is seen in the resting levels of these normal infants. This is not altogether surprising in view of the circumstances of the test. The infants chosen were a group attending a welfare centre at West Ham. The dosing was not directly supervised by the authorities but for three weeks before the test the mothers were instructed to give in addition to the usual diet a daily supplement of orange juice. The recommended dose, following the makers' instructions, was ½ oz. per day, which we find by titration to be equivalent to 8 mg. of ascorbic acid per day. Those babies over a year old were receiving, in addition, vegetables and fruit in their "basal diet." A number of factors might be responsible for the variations seen : (*a*) It is difficult to rely on mothers under hard conditions in poor homes adhering strictly to uniform doses. (*b*) It is conceivable that there may have been destruction of the vitamin in the urine in some cases—e.g., it is unknown whether in alkaline urine destruction may occur even in the bladder itself. (*c*) The requirements of infants may differ more widely than those of adults (cf. the uniform behaviour of adults in Fig. 2), or some of the infants may have not yet reached a condition of equilibrium under the increased fruit regimen. Tests to be carried out in institutions under strictly controllable conditions will eliminate factors (*a*) and (*b*) and enable a decision to be reached as to possibility (*c*).

Another series of tests was carried out on babies attending a centre at Leytonstone (Table VII.). The general conclusion reached was again the same—namely, that on adequate doses of vitamin C the excretion does not fall below the expected level of about 1–2 mg. per day per stone of body-weight. Although some "scatter" was again apparent in the values, there was a definite indication of increased excretion by those babies receiving the larger allowances of vitamin C (diets "B" and "D" in Table VII.).

TABLE VII

No. in order of age.	Age. Y. M.	Initials.	Diet "A" = ½ orange daily.	Diet "B" = 1 orange daily.	Diet "D" = 1 orange + 1 banana daily.
1	0 7	K. M.	0·91	..	..
2	0 9	P. R.	..	8·27	..
3	0 9½	S. P.	1·05	..	..
4	0 9½	L. S.	1·31 +	..	..
5	0 9½	D. D.	1·32 +*	..	..
6	0 10	T. J.	1·73 + +	..	..
7	0 10½	C. P.	6·73	..	..
8	0 10½	C. J.	10·02 +	..	..
9	0 11½	G. P.	1·64 +	..	..
10	1 1	B. M.	..	..	12·3 + + +
11	1 2	K. P.	1·14	..	..
12	1 5	A. J.	..	25·4	..
13	1 9	M. C.	..	57·0	..
14	1 10	M. F.	..	(1·63 +)	..
15	2 2	B. J.	..	2·87	..
16	2 4	J. S.	3·27 +	..	..
17	2 5	Y. W.	3·65†	..	..
18	2 9	N. I.	..	2·08	..

* Diet "C" = 6 teaspoonfuls orange juice daily.
† Diet "E" = tomato.
+ Indicates loss of some urine : values should be higher than indicated.

It is generally supposed that the vitamin-C requirements of an infant or child, calculated per unit of body-weight, are greater than those of an adult, since the organism may be presumed to have a greater call on all nutritive material during the period of growth. The above preliminary results may be taken as supporting this contention, to judge from the relatively large daily doses of vitamin C apparently needed to produce a given degree of "saturation."

THE QUESTION OF "LATENT SCURVY"

Earlier results with older children from institutions [1] indicate similarly that those who were known to have received a moderate daily allowance of vitamin C in the form of fruit (e.g., ½ orange and/or ½ apple a day) all fall well into their expected place—i.e., excreting not less than approximately 2 mg. per stone of body-weight. On the other hand, tests carried out at random on specimens of the infant and child population in several centres in this country have shown that lower reserves are not at all uncommon—i.e., in children whose diet has not been specially supervised by any authority. This points to the suggestion that large numbers of infants receive less than the optimum dosage of orange juice recommended by the clinicians. It may also be taken as supporting evidence in favour of the theory which has more than once been propounded that latent scurvy is not a rare condition. When the mothers are questioned about the diet

of the children one not infrequently receives the answer that although the doctor (or the welfare clinic) recommended orange juice, "the baby didn't seem to like it" or "it couldn't be afforded" or it was "not considered necessary."

VITAMIN-C EXCRETION IN PYREXIA

It has already been reported by Schroeder and by Harde [4] that during fever vitamin C is used up more rapidly than it is normally. We have confirmed this finding, e.g., in the observations shown in Fig. 2, on a subject suffering from mild coryzal fever of short duration. The excretion of vitamin C promptly fell within 24 hours of the onset of fever from 19 mg. to 9 mg. per day, and remained at a depressed level for a week or more afterwards although the daily dose of vitamin C was continued as before. A larger dose was needed to restore his "reserves" to their original value.

Such a result is important as indicating that the vitamin (in common with certain other metabolites) is utilised at an increased rate in fever. It confirms the need for the provision of a specially ample allowance of the vitamin during convalescence.

Technique of Method

Collection of specimens: need for storage in dark bottles.—The same procedure was adopted for collecting urine as that previously described. The urines were collected during half-day periods with the addition of 5 per cent. of acetic acid and then titrated immediately. In the presence of the acid the loss which occurs up to a period of about 12–15 hours is generally of little practical significance—viz., about 20–30 per cent.—provided the urine is kept in dark bottles. In the light however we have found that the vitamin may be fairly rapidly destroyed, as is shown by the following comparison between acidified urines kept in colourless and in dark-coloured bottles (Tables VIII. and IX.). By about 24 hours the loss may reach

TABLE VIII

Loss of vitamin C in acidified urine after standing overnight (16 hours)

No. of specimen.	Titration value in mg. per c.cm.		
	Initial value.	Value after 16 hours in dark bottle.	Value after 16 hours in light bottle.
1	0·106	0·093	0·045
2	0·080	0·065	0·031
3	0·050	0·041	0·020
4	0·014	0·012	0·002
5	0·020	0·017	0·008
6	0·035	0·019	0·014

TABLE IX

Loss of vitamin C in acidified urine after standing for 24 hours

No. of specimen.	Titration value in mg. per c.cm.		
	Initial value.	Value after 24 hours in dark bottle.	Value after 24 hours in light bottle.
7	0·08	0·05	0·004
8	0·10	0·03	0·005
9	0·10	0·03	0·003
10	0·09	0·04	0·004
11	0·06	0·03	0·003
12	0·04	0·02	0·002

serious proportions. When the urine has to be kept for such long periods, however, a procedure is available, involving treatment with H_2S, by which the ascorbic acid may be preserved or regenerated.[5]

Method of titration.—Only one point calls for special mention—namely, the need for the titration to be carried out rapidly (within two minutes). This has already been indicated but cannot be over-emphasised. The dye solution should be re-standardised frequently and the titration carried out in acid solution. (In the previous paper the strength of stock dye solution, of which 0·05 c.cm. is approximately equivalent to 0·025 mg. of ascorbic acid, was inadvertently given as about 0·05 instead of about 0·10 per cent.)

CONCLUSIONS ON TECHNIQUE

It is stressed that the total daily excretion of the vitamin in the urine should be measured and not merely its concentration. The urine should be collected in dark bottles, as light accelerates the inactivation of the vitamin. The titrations should be carried out as soon as possible after the urine is passed, but it may be kept with comparatively little loss for about 12–15 hours with the addition of 5 per cent. of acetic acid.

For the test dose, about 700 mg. of ascorbic acid should be given per 10 st. of body-weight. If a small response results, this dose should be repeated on one or more further days in order to distinguish between the milder degrees of deprivation and more severe hypo- or a-vitaminosis.

The rapid method of analysis described may estimate small traces of other substances present in urine as well as vitamin C, but this in no way affects its utility as a convenient clinical method for the purposes indicated, as is shown by the fact that the urinary response is found to be closely graded in proportion to the intake of the vitamin and that different subjects show close agreement in response when given the same vitamin intake. When however results of great precision are needed it is possible to refine the specificity of the technique and several alternative methods are indicated.

Summary of Results

1. Studies have been continued of the application of the method previously described and detailed quantitative data collected. The technique of the method and its specificity are discussed (see preceding paragraph).

2. Various graded doses of vitamin C were taken daily by adult subjects over long periods, and it was shown that their urinary excretion of the vitamin reached levels graded in proportion to their intake.

3. The effect of a test dose was similarly investigated and shown to be graded in proportion to their dietary intake, and so also to their "resting levels" before the test dose.

4. Surprisingly little variation was found between individual subjects, the same daily dose of vitamin given to a number of subjects producing after a time an almost identical rate of excretion.

5. It is confirmed, however, that in fever the output drops and the vitamin appears to be "wasted," and an additional dosage is needed to restore the subject to his original level. This result indicates the need for provision of extra vitamin C during convalescence.

6. In normal adult subjects of about 10 st. the addition to a diet fairly low in vitamin C of 3 oranges per day (90 mg. of ascorbic acid) leads to an excretion of about 50 mg., of 1½ oranges (45 mg.) to an excretion of about 30 mg., and ½ orange (15 mg.) to an excretion of about 15 mg. On the last-mentioned regimen the response to a single test dose of 700 mg. of ascorbic acid is of the order of 40–50 mg.

7. The reputed minimum dose of ascorbic acid needed to prevent the earliest symptoms of hypovitaminosis C in adult subjects is said to be about 25 mg. per day. In view of the above results therefore a presumption may be raised that the diet has been unduly low in vitamin C whenever the daily excretion falls below a titration value (uncorrected) of about 10–15 mg. per day (i.e., per 10 st. bodyweight) or the standard test dose of 700 mg. fails to give a response on the second day. *Direct* comparisons have still to be made between the mildest clinical symptoms of vitamin-C deficiency and the corresponding levels of urinary excretion.

In our experience, in this country the average daily excretion of normal adult subjects receiving small

(not liberal) allowances of fruit (or other source of vitamin C) is about 20 mg. per day.

Although the needs of infants and children for vitamin C seem to be relatively greater than those of adults, the same figures appear to apply approximately for their "*normal daily excretion*"—i.e., when calculated to a body-weight basis. Thus children of about one year receiving the "recommended" daily dose of orange juice excrete not less than 1–2 mg. of ascorbic acid per day. Their response to a test dose, as with adults, is also graded in proportion to the "resting level."

Judged by the urinary excretion figures, sub-optimum intakes of the vitamin are not uncommon.

We wish to express our indebtedness to the medical officer of health for West Ham for permission to publish the results obtained on infants attending the local welfare centre, and to Dr. M. Gilchrist for the great trouble she took in obtaining the material for the observations at Leytonstone. Messrs. Hoffmann-La Roche generously provided the ascorbic acid used in these tests.

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A CASE OF ADULT SCURVY

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In 1933 Harris, Ray, and Ward[1] introduced a titration method for estimating the amount of ascorbic acid in urine. This year Harris and Ray reported further experiences,[2] showing that the test was of value as an aid in the diagnosis of infantile scurvy, their patients having a low ascorbic acid output and failing to exhibit a peak rise after a large dose of the acid, in contrast to normal controls. Observations on adults showed that a low urinary output of ascorbic acid and a low excretory response to test doses went parallel to a history of vitamin-C underfeeding, and to a state of vitamin-C subnutrition as evidenced by a lowered capillary resistance. The following case is interesting because adult scurvy is now a rare disease and because it was investigated on the lines suggested by Harris and Ray.

CASE REPORT

A woman, aged 53, was admitted to the Hammersmith Hospital on Sept. 28th, 1935. She complained of pains in various parts of her body, a rash on her legs and weakness. She was depressed, irritable, and negativistic, so that a complete history was difficult to elicit, and investigations had to be limited. She discharged herself 12 days after her admission.

Prior to 1925 her previous history contained nothing of significance. Her family history was irrelevant. She had been married twice but had had no children. She objected strongly to all questions of a personal nature. She had an early menopause at the age of 43, after which she developed dyspepsia consisting of flatulence, epigastric pain immediately related to food, nausea, and occasional vomiting. She still suffers from these symptoms, and on account of them she has held to a fairly strict diet over the last ten years. She avoids green vegetables, fruit of any kind, and potatoes, and she boils all her milk; she eats very little meat; her diet consists practically of fish, eggs, custards, milk puddings, bread and butter. At Christmas time in 1934 she had a severe attack of epigastric pain and vomiting and went to bed, where she stayed for four months during which time her diet was stricter than ever. In May this year she began to improve and left her bed. In the middle of August, however, she had a sudden severe pain in the right thigh, and was helped back to bed where she was given aspirin and a liniment. Her landlady, while applying the liniment, noticed bruises on the right thigh, and later a rash appeared on the legs and abdomen, and small hæmorrhages were seen under the nails. The shoulders, knees, left forearm, and right thenar eminence became the seat of painful blue swellings which were exquisitely tender. She was admitted to hospital with the diagnosis of gastritis, purpura, and neuritis.

Examination revealed a pale thin woman of 53, weighing 5 st. 12 lb. She was irritable and depressed. There were extensive petechiæ, especially under the nails and on the legs, and tender ecchymoses in the right thenar eminence and in the right thigh posteriorly. Both knees and both shoulders were tender on pressure and painful on movement, but the swellings had subsided. There was no fluid in the joints and movement appeared to be restricted only by pain. There were no hæmorrhages in the optic fundi nor in the conjunctivæ; there was no blood in the urine nor in the stools; there had been no epistaxis, hæmatemesis, nor hæmoptysis. Her teeth had been removed with the exception of one lower molar which was loose in its socket, the surrounding gum being retracted, hæmorrhagic, and slightly ulcerated; the rest of the gums were pale and hard. The fauces and tonsils were normal, the tongue furred, large, and flabby. No abnormality was detected in the ears.

The heart was not enlarged, there were no murmurs, the rhythm was regular, there was no signs of congestion, and the electrocardiogram was normal. The arteries were not unduly thick for her age and her blood pressure was 150/90. The lungs showed no abnormality, and the costal cartilages and costochondral junctions were normal. The lower border of the liver was 3 in. below the right costal margin. It was somewhat tender on palpation, and the edge was smooth. The spleen could not be felt, and no other intra-abdominal abnormality was detected. The central and peripheral nervous systems appeared normal in all respects: there was no impairment of sensation and apart from the ecchymoses there was no hyperæsthesia; the pupils, tendon reflexes, and cranial nerves were normal.

The red blood-cells numbered 3,200,000 per c.mm., the hæmoglobin measured 58 per cent. by the Haldane method, and the colour-index was 0·9. There were 2·5 per cent. reticulocytes. The mean red cell volume was 80 cubic microns. The platelets amounted to 340,000 per c.mm. The leucocyte count was 5000 per c.mm., of which 65 per cent. were polymorphonuclear and 32 per cent. were lymphocytes. The blood coagulation time was 2 minutes at 37° C., and the bleeding time was 4 min. 15 secs. The erythrocyte sedimentation-rate was 54 mm. of plasma at the end of one hour with the Westergren technique. The blood fragility test showed that hæmolysis commenced with 0·44 per cent. of sodium chloride, and was complete with 0.28 per cent. sodium chloride. The blood van den Bergh test was directly and indirectly negative. The carbon dioxide-combining power of the blood was 46 c.cm. of carbon dioxide (normal, 50–70 c.cm.).

The urine was alkaline on admission with a specific gravity of 1002. It contained a trace of albumin, but no blood or sugar. Rothera's test for acetone was negative. Microscopically there were numerous squamous, epithelial, and granular casts, and a few red blood-cells were seen.

Radiography of the skeleton showed no joint changes, no alterations of structure or density of bone, and no evidence of subperiosteal hæmorrhages. While the patient was in hospital her temperature varied between 97° and 100° F., but was higher than 99° on only one occasion. Her pulse-rate averaged 90.

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[2] Harris and Ray: THE LANCET, 1935, i., 71.

INVESTIGATION

The excretion of ascorbic acid in the urine was then investigated and compared with that of a normal control patient of the same weight. The ascorbic acid was estimated in the freshly voided specimens of urine by titration with 0·1 per cent. dichlorophenolindophenol according to the procedure outlined by Harris and Ray.[3] Urine specimens voided during the night were preserved with 10 per cent. of glacial acetic acid. The outputs of vitamin for 24-hour periods before and after administration of a massive dose (600 mg.) of ascorbic acid were determined. A control case was used in which there was no history of vitamin deprivation. The findings were as follows :—

TWENTY-FOUR HOURS BEFORE VITAMIN ADMINISTRATION

Scorbutic.—1303 c.cm. of urine, no ascorbic acid found.
Control.—1442 c.cm. of urine, total ascorbic acid found 53 mg.

TWENTY-FOUR HOURS AFTER VITAMIN ADMINISTRATION

Scorbutic.—1681 c.cm. of urine, total ascorbic acid excreted approximately 1·7 mg.
Control.—1049 c.cm. of urine, total ascorbic acid excreted 231 mg.

It was considered that this result proved that the diagnosis of scurvy was correct. The patient was treated with 80 mg. of ascorbic acid in tablet form daily, while she was kept on a vitamin-C free diet. There were no further hæmorrhages, and the petechiæ and ecchymoses were fading when the patient discharged herself.

DISCUSSION

The case illustrates that even to-day, when the existence and importance of vitamins are common knowledge, scurvy still occurs in adults. In this instance a dyspeptic diet was the cause of the vitamin deficiency.

The case bears out the contentions of Harris and Ray that the ascorbic acid urinary excretion test is a valuable aid in the diagnosis of scurvy. The patient received over 1000 mg. of ascorbic acid and excreted only 1·7 mg., and that was after the test dose of 600 mg. A normal control, after a test dose of 600 mg. of ascorbic acid excreted 231 mg.

There can be little doubt that both children and adults store vitamin C in the tissues, for Harris and Ray have shown that the excretion of ascorbic acid continues at an even rate for many days after complete elimination of the vitamin from the diet, and there is no evidence that human beings can synthesise it. That 1000 mg. of ascorbic acid were almost completely retained in the body of this patient suggests that her stores were very low.

The anæmia of scurvy is of interest. It is generally recognised that vitamin C is necessary for blood formation, and that a definite reticulocyte response can be demonstrated in cases of scurvy with anæmia treated solely with vitamin C. The anæmia may be cured completely with this treatment alone if it is not associated with an iron or other deficiency. Hæmoglobin estimations indicate that the anæmia, when pure, is usually orthochromic,[4] and the red cells are usually normocytic,[4] as measured by the method of Price-Jones. In this case the anæmia was moderate, and appeared to be orthochromic and normocytic. It was not possible to estimate the reticulocyte response owing to the patient's objections. The bleeding time was prolonged and the blood-platelets were normal.

SUMMARY

A case of frank adult scurvy is reported. The cause of the condition was a long-continued dyspeptic diet which was almost free from vitamin C. Examination of the urine showed that the patient was excreting no ascorbic acid by this route, whereas a control patient excreted 53 mg. in 24 hours. After an initial dose of 600 mg. of ascorbic acid by mouth the scorbutic patient excreted 1·7 mg., whereas the control excreted 231 mg. The patient received a further 80 mg. per day for a week, while she remained on a diet containing no vitamin C. During this time she excreted no more ascorbic acid. No further hæmorrhages occurred and the original petechiæ and ecchymoses were fading when the patient discharged herself from hospital.

The biochemical part of this investigation was carried out by Dr. E. J. King in the biochemical laboratory of the British Postgraduate Medical School, and to him my thanks are due. I also wish to thank Prof. F. R. Fraser for his help and interest in the case.

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THE SIGNIFICANCE OF LATERAL ABERRANT THYROIDS

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THE peculiar behaviour of misplaced thyroid tissue has been studied by many observers. It is now established that thyroid tissue occurring in regions remote from the neck and especially in bones represents metastasis from a malignant growth of the thyroid which may be actually a small undetected malignant adenoma (Joll,[1] Dunhill,[2] d'Abreu [3]). If however tissue of the thyroid type is found in the neck apart from the normal gland, the explanation is not so defined or simple. Such tissue may occur either above, below, or lateral to the gland proper. Extremely rarely the aberrant tissue may be found in the larynx.

There is no need here to describe the embryology of the thyroid ; it is sufficient to note that the thyroid commences high up in the primitive pharynx as a median pouch between the second arch and the tuberculum impar and then descends relatively caudally ; the ultimate bilobed shape of the gland depends upon a lateral attachment to the third arch on each side and glandular tissue runs along the artery of this arch and ultimately fuses with the epithelium of the fourth lateral pouch (Frazer [4]). Occasionally portions of gland continue to pass caudally and the existence of intrathoracic pieces of thyroid tissue is well known. Another site for ectopic thyroid tissue is at the back of the tongue in the region of the foramen cæcum. Anatomically, physiologically, and pathologically thyroid tissue in these two sites differs greatly from lateral aberrant thyroids (Billings and Paul [5]) ; the latter usually show malignant changes, the former rarely, if ever, do. Further, myxœdema may follow excision of superior and inferior masses (Grace and Weekes [6]), but it never follows removal of lateral thyroid tissue.

In contrast to the simple embryological explanation of superior and inferior thyroid tissue is the obscure origin of lateral aberrant thyroid tissue. Anatomists are unwilling to accept an origin from the fourth arch or the ultimo-branchial body ; the more obvious explanation seems to be that as the blood-vessels in the neck, to which the thyroid is intimately attached, grow outwards they carry with them small portions of thyroid tissue (Frazer,[4] Woollard [7]). The following case suggests that an origin from the fourth arch region is not impossible.

CASE 1. *Lateral aberrant thyroid occurring in a branchial cyst.*—A woman, aged 23, was admitted to the General Hospital, Birmingham, on August 14th, 1932, under the care of Mr. Rose, with a lump in the right side of the neck which had appeared five years previously and had remained the size of a marble until a recent enlargement had occurred. The general condition was excellent: a painless, cystic swelling 1½ in. in diameter presented in the posterior triangle of the neck behind the lower third of the sternomastoid; there was no adherence to the skin and the lump was movable on the deeper structures. The preoperative diagnosis was "branchial cyst." Mr. Rose operated and exposed a cyst, the pedicle of which ran behind the great vessels of the neck up to the pharynx to which it was attached and from which it was dissected. During the removal several small hard swellings were felt in the cyst. Convalescence was uneventful and the patient on inquiry early this year (two years and six months after the removal) was well and completely free from recurrence.

The cyst is lined by ciliated columnar epithelium, part of which is arranged in complicated papillary processes, the solid portions consist of poorly developed thyroid tissue in which some colloid is present (Fig. 1).

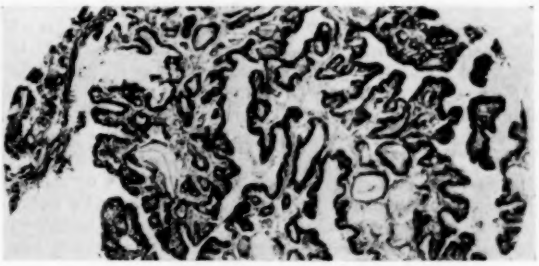

FIG. 1 (Case 1).—Thyroid tissue in a branchial cyst. (× 60.)

It will be seen from Fig. 1 that the tissue is papillomatous in type. The evidence against the tumour being solely a lateral aberrant thyroid showing cystic degeneration is the presence of ciliated epithelium and the fact that the cyst was attached to the pharynx. Branchial cysts are usually lined by squamous epithelium, but branchial fistulæ are commonly lined by columnar ciliated epithelium. There is some evidence therefore from this case that certain lateral aberrant tissue may develop from tissue in the neighbourhood of the fourth pouch. It must be noted however that thyroglossal cysts are lined by squamous epithelium and may be columnar and ciliated (Joll [8]). It would therefore be foolish to exaggerate the significance of this case as indicating an origin from the fourth pouch.

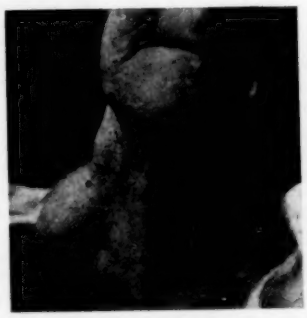

FIG. 2 (Case 2).— Photograph showing the lump behind the right sternomastoid.

FIG. 3 (Same case).—The tumour.

FIG. 5.—Tumours removed in Case 3.

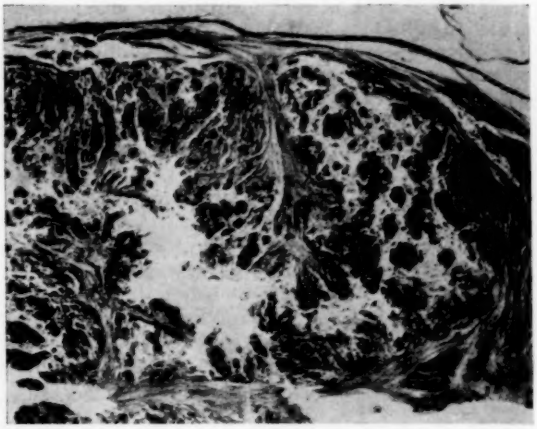

FIG. 4 (Same case).—Section showing malignant change. (× 8.)

It is now well recognised that these lateral aberrant thyroids are extremely dangerous as potential areas of malignant disease. Dunhill says: "These misplaced bits of tissue . . . foredoom the host to carcinoma from before the day of birth." Others, although regarding them with grave suspicion, are not quite so gloomy in their prognostications. In recording 4 cases, Dunhill [2] points out that 2 proved fatal from secondary malignant metastases. The malignant tendency is undoubtedly due to the extreme degree of papilloma-formation seen in the intracystic masses. In reporting 35 cases, Billings points out that 70 per cent. were papillary in type. Dunhill, discussing the papillary arrangement, emphasises its potential malignancy in thyroid tissue whether in normal or abnormal situations; it occurs in adolescent and toxic goitre and has been produced in brook trout; he goes on to suggest that stimulation, whether pathological or physiological, causes this architectural type because of the inherent properties of thyroid epithelium; he asks if papilliferous adenocarcinoma is due to stimulation of a part of the thyroid which is subefficient through maldevelopment or malposition, or whether it is due

to abnormal stimulation. From puberty onwards for some 10–15 years the thyroid is subjected to an increasing strain. Dunhill points out that of 45 reported cases the condition was obvious in 25 before the age of thirty, and in 15 before the age of twenty; this suggests that the abnormally placed tissue responds to the acting stimuli by a cystic papillomatous hyperplasia. Of the 35 cases collected by Billings and Paul,[5] 26 were in females and 6 in males, the sex-incidence not being reported in 3; the extra burden of menstruation, pregnancy, and lactation may account for the greater stress thrown upon the gland in the female.

Why the tendency to papilliferous formation should be more marked in lateral aberrant thyroids than in the superior and inferior median displacements remains unexplained. Whatever be the cause of the papillomatous change, the menace of carcinoma here,

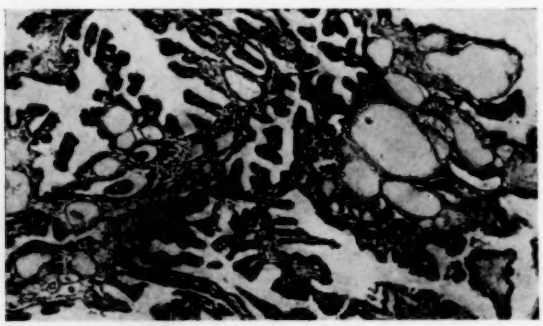

FIG. 6 (Same case).—Section of tumour showing colloid vesicles and papillary structure. (× 45.)

as in the breast, rectum, and tongue, is undoubted and all published series of lateral aberrant thyroids show that this complication occurs frequently although it may be delayed for many years, as in the following case.

CASE 2.—Mrs. A., aged 69, was admitted on March 7th, 1934, to the surgical unit at the Cardiff Royal Infirmary complaining of a lump situated behind the right sternomastoid muscle about 1¼ in. above the clavicle (Fig. 2). This was painless and had existed for over two years, with progressive increase in size; there was some dyspnœa and the patient had become more nervous before admission. There was no family history of goitre. On examination the patient was well developed but pale; the pulse was irregular and varied between 110–140 beats per minute; there was auricular fibrillation and the heart was enlarged. In the posterior triangle of the neck on the right side there was a hard large spherical mass 2 in. in diameter and above this a second nodule could be felt; both were movable. The thyroid appeared to be normal and moved on deglutition. At operation under general anæsthesia the swellings were removed without difficulty; the upper tumour had the characteristic bluish-black colour of lateral aberrant thyroid tissue. The larger lower mass was not so dark, and on pathological examination it was seen to have undergone malignant change into papilliferous carcinoma (Figs. 3 and 4). Convalescence was uneventful, but unfortunately efforts to trace the patient have been unsuccessful.

Such a case occurring late in life suggests that certain unexplained so-called branchiogenetic carcinomata may have their origin in misplaced thyroid tissue.

The fourth case of lateral thyroid tumour I have seen is characteristic of the earlier type; diagnosis is rarely made correctly, and although I had had the good fortune to study personally the case recorded by Forty,[9] I diagnosed the condition before operation as one of tuberculous adenitis.

CASE 3.—A man, aged 30, a patient in the surgical unit of the Welsh National School of Medicine, had had a swelling in the right side of the neck for five years; this had appeared after a tooth abscess and quinsies had occurred. On examination two swellings existed half-way down the right sternomastoid, one being partly in the anterior triangle and under the sternomastoid, the other being behind the muscle; they were soft in consistence and semifluctuant; there was no movement on deglutition, but the swellings were freely movable on the surrounding structures. As stated, the preoperative diagnosis was tuberculous glands. At operation (Feb. 5th 1934) through a curved incision two bluish-black tumours were exposed and a diagnosis of lateral aberrant thyroid tumour was made. Both tumours were well encapsulated and were easily removed, convalescence being uneventful. In view of the possible danger of malignancy, the patient's condition has been carefully followed; he remains well and free from clinical evidence of recurrence a year after operation.

Fig. 5 shows the two tumours: the upper really consists of two swellings; the multiplicity of these little tumours has been noted by Dunhill[2] and Billings and Paul.[5] The lower tumour has been opened and shows small rounded masses projecting into cystic spaces. Fig. 6 is taken from a microscopical preparation from one of these masses, and shows well-filled colloid vesicles. The papillary structure is noteworthy and is an indication of the potential malignancy of the tumour.

CONCLUSION

The embryological explanation of laterally misplaced thyroid tissue remains uncertain. That the outgrowing blood-vessels carry the tissue with them is the modern view; origin from the fourth pouch or from the ultimo-branchial body is unlikely, but is accepted by some authorities and is in some respects supported by Case 1 reported here. The pathological changes in these cases are very different from those of aberrant thyroid tissue found in a superior or inferior position; intracystic papilloma-formation is common and this often proceeds to malignant change. Symptoms of hypothyroidism after removal are unknown, and the cases are thus in contrast with those of superior aberrant thyroid where such symptoms are not uncommon. Clinically the condition is not usually diagnosed until operation. The most important diagnostic appearance is the bluish-black colour, and unless this fact be known the surgeon may be puzzled by the appearances and may regard the condition as a melanotic growth. If such tumours are seen careful and complete extirpation is essential because of the danger of their becoming malignant. If a correct preoperative diagnosis be made there is no justification for abstaining from immediate operation. The prognosis is doubtful and all cases must be carefully followed up. The best treatment for recurrence appears to be excision associated with radiotherapy.

I wish to thank Mr. B. T. Rose for allowing me to report the first case.

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CLINICAL AND LABORATORY NOTES

PULMONARY EMBOLI OF LYMPHATIC ORIGIN

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Chylous cysts of the mesentery and mesocolon were first fully described by Rokitansky in 1842. Since then some 200 cases have been reported.[1 2] The following case is recorded because of the comparative rarity of the primary condition, and because of the features shown after operation.

History.—A. B., aged 20, a nurse, was seen in January, 1935, and complained that for six years she had had a constant dragging pain in the left iliac fossa, with attacks of a colicky nature, when the pain radiated to the right iliac fossa. It had not been severe enough to keep her awake at night, but was getting worse. It was accompanied by nausea, but no vomiting. It had no relation to food, and was not relieved by lying down. The appetite was good and the bowels open regularly without aperients. She had been kept in bed for a fortnight, six weeks previously, and the pain had been slightly relieved.

Examination.—There was ill-defined tenderness in the left iliac fossa, with a feeling of resistance on deep palpation; but no other abnormality was discovered by clinical examination. Radiography showed no lesion of the gastro-intestinal or renal tracts. Blood count showed a relative lymphocytosis. Vernes's test was negative.

At operation (Jan. 23rd, 9.50 A.M.) a midline subumbilical incision was made and a unilocular cyst, the size and shape of a butcher's sausage, was found in the sigmoid mesocolon. On its outer surface were a number of small white spots. Some clear fluid was aspirated, the cyst excised, and the abdomen closed.

Pathological reports.—Fluid of cyst: clotted rapidly; nothing abnormal on bacteriological examination. Cyst wall: fibrous elastic tissue and muscular tissue arranged as in a vein; in a few parts there is an endothelial lining, but often it is bare: the white areas consist of fibrin, and necrotic tissue which is partially calcified.

After-history.—On the day after the operation, at 10.20 A.M., the patient, who had been quite comfortable, had a sudden attack of dyspnœa, with pain in the right side of the chest. She was pale, with a feeble irregular pulse. Oxygen was given continuously, and within two hours the pain and dyspnœa had disappeared, and the pulse had become more regular. At 1.15 P.M. on the same day there was another attack of severe dyspnœa, with pain on both sides of the chest. She was pale, and the pulse was barely perceptible at the wrist. Coramine 1·7 c.cm. was given, with oxygen, and she became much better in an hour. On Jan. 29th, at 11 P.M., there was a third attack of dyspnœa, with pain in the upper abdomen. The pulse and colour of the patient remained normal. Morphia gr. ⅛ and oxygen were given, with improvement in an hour. The remainder of the convalescence was uneventful. She got up on Feb. 11th, and was discharged on Feb. 24th.

The three attacks of dyspnœa after the operation were undoubtedly due to pulmonary emboli. They appeared, however, earlier than is usual in post-operative cases. No large vessels were encountered in the removal of the cyst from the mesocolon, and no ligatures were applied. The lymphatic connexions were severed and it is to be expected that clotting of lymph occurred in these lymphatics, extending centrally. Fragments of these clots probably reached the general circulation through the thoracic duct and lodged in the right auricle. There, by deposition of fibrin, they would increase in size, and they would finally pass through the pulmonary artery to cause obstruction of its branches in the lungs.

I should like to express my thanks to Prof. C. A. Pannett for permission to record this case.

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ORCHIDECTOMY ON THE HIGH SEAS

By Philip E. F. Frossard, M.R.C.S. Eng.

SURGEON, P. AND O. STEAM NAVIGATION CO.

A steward, aged 30, with no previous history of disease, was admitted to the ship's hospital at 6.30 P.M. on Oct. 23rd, 1935. He had been struck on the scrotum by a cricket ball—a full pitch from a fast bowler—two hours previously. He was able to walk on board but was in considerable pain.

Local examination revealed a firm, tender swelling of moderate size of the right side of the scrotum and contents. At this stage there was no pain, tenderness, or swelling over the inguinal canal.

The patient was treated with rest and compresses, morphia gr. ¼ being administered after examination. The progress was apparently satisfactory. The patient was comfortable and the swelling began to subside. Five days later, on Oct. 28th, he complained of abdominal pain and of having had a restless night. The temperature was 99° F. and the pulse-rate 80. There was an increase of swelling and tension. The scrotum was red and œdematous. There was definite swelling and tenderness over the inguinal canal extending over its entire length and into the right iliac fossa. Owing to the exacerbation of symptoms and the possibility of added infection, it was decided to explore the scrotal contents and operation was performed on the same day.

The testis after removal, showing the injury. The white line points to the split edge of the tunica albuginea.

The ship's operating theatre (appointed for the purpose) was made ready and the patient was on the table within an hour and a half, the ship having eased down to dead slow. The anæsthetic, administered by Dr. E. O'Brien, the assistant surgeon, consisted of ethyl chloride followed by open ether, a preliminary injection of morphia gr. ¼ and atropine gr. 1/100 having been given. Incision revealed the vaginal sac filled with blood clot and altered blood. The testis was seen to have been split near the centre right through to the epididymis, the split being in the transverse axis. The parenchyma bulged through the cleft tunica albuginea; the epididymis and cord were a dark purple, grossly swollen. It was evident that a condition of comparative local stasis of the blood circulation was present.

The left testis being uninjured and apparently normal, it was decided to remove the damaged organ, complete with the epididymis and cord at the level of the external abdominal ring. The infiltrated and inflamed scrotal sac was drained through a stab wound at the lower pole of

the scrotum. The patient was returned to bed and made a satisfactory recovery. Three weeks later, on arrival in London, he was landed "convalescent."

It may be of interest to note that the operation was performed off Cape Guarda Fui in calm weather. The stopping of a ship at sea is a serious matter; like the stopping of a railway train, it is not to be undertaken lightly and there are penalties for the "improper use of the emergency signal." Unless sufficient way is maintained, the ship will not answer to the helm and will fall off her course, and "not under control" signals have to be hoisted which occasion considerable concern to neighbouring craft. Hence on surgical occasions a speed is ordered which reduces vibration to nil and yet keeps the ship on her course.

Nowadays operations at sea are not the nightmares of old. Full aseptic technique is employed and only two conditions are required—namely, that both surgeon and patient are "sailors."

MEDICAL SOCIETIES

MEDICAL SOCIETY OF LONDON

AT the meeting of this society held on Dec. 9th, the President, Prof. G. E. GASK, occupying the chair, a discussion on the

Care and Treatment of Difficult Children

was opened by Dr. REGINALD MILLER, whose remarks are printed on p. 1393.

Dr. WILLIAM MOODIE said that every physician, whether a psychologist or one more or less orientated towards the physical side, must approach the problem of health or ill-health in the same way. It was necessary to define the medical attitude to the question, seeing that the lay press constantly printed articles telling parents how to do their jobs; there was being created in this country a kind of psychology consciousness, not perhaps entirely confined to laymen, which had antagonised scientific thinkers and had retarded the study of practical psychology. The latter could be an excellent servant, though as a master it might be disturbing. Theory was all right in its own place as a background; the foreground should be occupied by practice. He did not feel clear as to what was meant by the "difficult child" unless it was a mixture of the nervous child and the one who presented behaviour disorders or problems. The children under consideration were classifiable under two groups: (1) children who, through exhibiting some disorder of behaviour or conduct, showed nervous symptoms or made one feel that they were laying the foundation of what were termed functional nervous disorders; (2) delinquent children, manifesting something rather different. Every normal child behaved in an unusual way at times, because in the early days learning how to behave was not easy; it seemed to be a kind of match or contest "Self versus the Rest." The child made mistakes, because all learning was largely a matter of trial and error. When the learning period had passed, these slips of conduct must be regarded more seriously. A child sucking its thumb at six weeks of age excited no comment, but at six years this was a different matter. And every child was enuretic at some period. Some errors seen in later childhood might be no more than a persistence of habit. If a child was sucking its thumb at 8 years of age it was generally doing other unusual things also, such as sleep-walking or nail-biting, and was either shy or aggressively violent. Complexes of symptoms might be found which were an external evidence of some deep-lying mental disturbance. In these conditions lay the beginnings of the psychoses and psychoneuroses which showed in later life. Hence the "difficult child" was worthy of careful investigation and every therapeutic effort.

Behaviour was the result of two separate but interdependent sets of circumstances: those (1) of the moment, (2) of the past. Such factors as fatigue, hunger, illness would affect the behaviour in definite ways. The investigation of the condition must be undertaken in a spirit of detachment. Every normal adult had within him the urge and desire to manage children, and in the presence of misbehaviour of the child to adopt a minatory attitude, but didactic methods seldom carried one far in psychology. Cause and effect must be linked only after careful observation, and every examination of a child must include a complete physical one, especially so as to detect any metabolic errors. And all information concerning the environment in which the child had been brought up must be obtained. The treatment must be so planned as to counteract the forces at work. There were four convenient groups from this point of view: (1) Obviously stable children who had to try to adapt themselves to abnormal environment; (2) children who, though stable, had been taught a bad style of living, and so experienced difficulties in adaptation; (3) unstable children who could not adapt to any conditions; (4) the mentally defective and psychotic.

There was, he said, an erroneous idea that the bright child must be kept back academically. Some children were being literally worn out by their own activity. In these children a frequent diagnosis was "nervousness," and the prognosis was usually "He will grow out of it," or "Keep him away from school and he will do well." For these restless energetic children Dr. Moodie considered that there was but one remedy—namely, real academic work: arithmetic, mathematics, reading, and writing. It was necessary that the balance between intelligence and attainment should be adjusted. Schoolmasters could not make this estimation. Dr. Moodie thought that the reliability of school reports sometimes varied inversely with the fees paid, or with the square or cube of the fees paid. Every child was the subject of fears and anxieties, and if his potential energy was dammed up, those fears became accentuated. In the presence of hard academic work the fears were seen to fade. An important matter was the need for a sense of security. This depended on a stable home and reasonable discipline. It was not possible to ensure the former, but discipline was possible for all, though many parents were incapable of exerting it reasonably. Much benefit followed the expression by the child of his thoughts and their subsequent discussion. The great object was to release repressed wishes. In this group of children much research still remained to be done.

Referring to delinquents, Dr. Moodie said that last year he examined 1700 delinquent children who had been tried in the London courts. Among them he found some interesting sexual cases, and some curiosities; but he had never seen any kleptomaniac children. A curve made of results of intelligence

tests among these children was practically of the same shape as that for the normal community, except that the peak was 93 instead of 100, indicating that delinquents as a whole were slightly dull. In all of them there was aggressiveness and resistance to authority, which, in many cases, could be traced back to disturbed marital conditions in the home. Also, a number of these children were compared in educational attainment with a large number taken from ordinary schools; it was found that the number of those backward in arithmetic was more than four times as great as those in ordinary schools; the relative degree of backwardness in the subjects of reading and writing was even greater. Dr. Moodie urged that the few mentally abnormal children in this group should be treated by some form of psychological analysis. Many of the children seen were not in themselves psychopathic and could be treated by general methods, such as by the adjustment of their education or the adjustment of their discipline.

Dr. W. G. WYLLIE pointed out that there was a small group of children who were unable to read or write at 9 to 14 years of age. At schools with large classes such children were either kept down with children younger than themselves and remaining at the bottom of the class even there, or they were said to be mentally deficient and were sent to some special school. For the defect of those children he thought the proper name was "visual imperception." They were able to recognise each separate letter, but stringing letters together to form words confused them. Sometimes parents, impressed by what the teacher said, thought they would see the doctor about them, as they seemed intelligent, and could go shopping successfully and bring back the right change. With the assistance of a psychologist at a child guidance clinic they changed from morose to happy children. He wondered whether the L.C.C. would have intelligence tests done on any large scale in the future.

Dr. C. F. HARRIS said he would like to underline Dr. Moodie's remarks about parental indiscipline, because so many of the children who seemed to have run across authority seemed to be suffering not so much from any evil trait or incompetence of their own, but from the fact that the parents themselves had not been subject to discipline, and so had no idea how to bring up their children. How many children stigmatised as "difficult" would be so under conditions which were normal? He agreed with Dr. Miller's suggestion to get such children away from their home surroundings and send them to a preparatory school. Instead of seeking to establish this "difficulty" as a clinical entity it would be well to realise that the children concerned were normal human beings under abnormal circumstances.

Dr. R. A. YOUNG agreed that this was a question of environment and parental control. The present generation of children had been brought up under rather happy circumstances and had been the friends of their parents. Perhaps there were already indications of a swing of the pendulum to a different state of things.

Dr. G. W. B. JAMES said the title "difficult children" seemed to boil itself down to "difficult parents"; of late years in his out-patient department his method had been to talk more to the parents than to the child. He fully agreed with Dr. Miller's remark that some fathers constituted excellent mothers. It was difficult for many homes in these days of economic stress to be run without a feeling of chronic anxiety, and anxiety exerted a tremendous influence on the children. This was not confined to the poorer homes where unemployment always hovered; the rich man would return home and bewail that shares were down, and he was likely to be ruined. Examination of the parents and of the atmosphere of the home were the main factors in the treatment of difficult children.

Dr. D. W. WINNICOTT referred to the little band of psychotherapists who were content to peg away at a certain method of investigation which did not affect general practice because so few children could be treated by it. The parental factor was undeniably important, but he contended that it led nowhere in the matter of scientific investigation, because if the parent was difficult little could be done, the feeling being that the said parent ought to have been treated when young. It was not a question of telling some parents what to do, but of making them less anxious and rendering them happy in their home relations, an impossible task if they were not already happy. In the delinquent child the lack of parental love was a very important factor; and earlier experiences such as the lack of love of the infant were also significant. Many of these children were unwanted infants, and were passed from one person to another. The study of children need not be the study of their parents; much could be done by a study of the children themselves. Dr. Winnicott had been able to carry out a successful analysis of children, even when the external circumstances could not be altered and had remained unfavourable. Some children who looked as if they were mismanaged were extraordinarily difficult children who dealt with underlying depression in a manic way, and who, later in life, would become manic-depressives. In many cases of children who had been sent to him because the parents were bad he found himself sympathising with the parents.

Dr. MILLER, in reply, raised the question of the likelihood that children brought up in flats in central London who were unable to go out except fully clothed, and then not into playing fields, might reflect characteristics due to this unnatural environment. He considered that children of divorced parents mostly suffered from the parental side of their lives. It might be said that one mother was bad and one father was bad, but when a child had four parents it was something fairly severe for the child to put up with. His experience of school people was that they dreaded having the children of divorcees. He feared that the wealth of criticism and the spate of articles on the bringing up of children would have, as one result, the increasing of anxiety on the part of the mothers.

Dr. MOODIE, in reply, said he thought children could be brought up well in flats, though central London flats had not the advantages of those on the borders of Regent's Park. In an undue proportion of homes some disturbance of the marital situation existed; and many children came from broken homes. But if children were not subjected too long to disturbed homes and the children themselves were stable, they were able to get over their bad circumstances fairly well. He often pointed out to parents the difference between responsibility and guilt; one could be responsible for a situation without being blameworthy. The lateness of learning to read and write to which Dr. Wyllie had called attention was really an inability to appreciate position and form, which extended beyond the written word to other things.

MIDLAND MEDICAL SOCIETY

AT a meeting of the Birmingham Medical Institute section of this society, held on Dec. 4th, with Prof. W. H. WYNN, the president, in the chair, a paper was read by Mr. J. W. RIDDOCH on

Surgical Shock

He said that Boise, writing in 1907, was apparently the first to put excessive sympathetic irritation among its causes. Work done during the late war had resulted in the toxæmic theory of shock being generally accepted, but in more recent years experiments by M. I. Smith and others rendered it untenable. Blalock had shown the importance of local fluid loss in experimental traumatic shock, but though the work of Holt and Macdonald and of O'Shaughnessy and Slome confirmed that of Blalock, they suggested that a nervous factor was also at work. It would be hard to convince clinicians that surgical shock was in no way related to centripetal nervous influences.

The clinical picture of advanced shock included a low blood-pressure, but the early stage might show a rise of, or no change in, the blood pressure. Even at this stage concentration of the blood had been demonstrated and there was diminution of the pulse pressure. Sensory stimuli caused rises of systolic pressure, and only later was there a fall in mean pressure with a big reduction in blood volume.

The causes of sympathetic activity included the unpleasant emotions (e.g., fear and anxiety) and pain, cold, and asphyxia. Such factors were recognised clinically as important in producing or intensifying shock. In postoperative shock and in wounded men (Cannon) the blood-sugar level was always found to be raised, and Mr. Riddoch showed that the rise in blood-sugar which occurs during abdominal operations under general anæsthesia could be stopped by splanchnic analgesia. This indicated that the hyperglycæmia was due to sympathetic action, and supported the theory that the raised blood-sugar in shock was associated with sympathetico-adrenal stimulation. Sherrington and Copeman (1893) had demonstrated a local increase in the specific gravity of the blood on stimulation of the sympathetic supply to the thyroid gland, and Bainbridge and Parkinson (1907) that chromaffin tissue was absent in death from postoperative shock, suggesting that there had been an intense outpouring of adrenaline. Bainbridge and Trevan (1917) produced shock with infusions of adrenaline and believed that the blood volume was reduced. Freeman (1933) with infusions of adrenaline got a reduction in blood volume of 14 per cent., and this was prevented by ergotoxine. In other experiments sham rage reduced the blood volume by 22 per cent., but this did not occur after ergotoxine, or after previous removal of the sympathetic chains. Thus excessive sympathetic activity was known to occur in shock, and all the known features of shock could be produced by excessive sympathetic stimulation.

The curious apathy and diminution of sensation was interesting in the light of recent work. Feng (1933) ascribed decreased sensibility, caused by injury to a piece of frog's skin, to liberation of potassium, which was present in higher concentration in the cells than the fluids of the body, and D'Silva (1933 and 1934) found that adrenaline and other sympathetic stimulants produced a rise in serum potassium. This liberation of potassium might well be the cause of the sensory depression observed in the shocked state.

The theory of sympathetic hyperactivity helped to explain why pleasant surroundings and the avoidance of mental stress are desirable, and why no surgeon likes to deal with the over-anxious type of patient. The good bedside manner thus acquired scientific sanction; and the principle of free choice of doctor had a physiological background.

THEORIES AND TREATMENT

Prof. SEYMOUR BARLING regarded circulatory collapse as the most noteworthy feature of secondary traumatic shock; the systolic pressure might fall to 90 mm. Hg or less, but this was not inconsistent with ultimate recovery. The mental condition varied, and in the presence of a painful lesion restlessness persisted and seemed to hasten the downhill progress. In the shock-like condition seen in gas-gangrene or other forms of overwhelming sepsis, the patient might be delirious, or alert and coherent up to the moment when he lay back dead. The clinician and the experimentalist had studied the problems of shock extensively but so far inconclusively. The experimentalist sought to produce and analyse the condition freed from all secondary factors which might disturb his experiment, whilst the clinician, finding a shock-like condition present under a number of diverse circumstances, sought common underlying factors as an explanation of all. To those who were doing surgery during the war, Dale's theory that shock is caused by histamine-like bodies of a depressor type, produced in the damaged area, was always attractive. Product as it was of the experimental methods, it had now been almost universally disproved by the experimentalists. Nor had it received much support on the clinical side; for although at first it seemed to explain the severe shock associated with burns this explanation broke down when it was found that tannic acid treatment, though otherwise useful, did not lessen mortality in the first 48 hours when shock was the effective cause of death. The theory that shock arises from fluid loss into the traumatised area by exudation of plasma and bleeding independent of external blood loss had always been satisfying to the clinician and had recently been supported by more exact experimental research. It explained the circulatory collapse and the value of remedies known to be helpful. It would be a mistake, however, to overlook the fact that more than one factor may be at work, and that in different types of clinical shock these factors may be effective in varying degree. That nerve-impulses from the traumatised area may play a part in the general depression of vitality seemed reasonable. The relationship of pain to shock; its effect in prolonging and developing the condition; and the beneficial effect of anæsthetics and analgesics had always been apparent to the clinician and seemed to support his contention that nervous influences play a part in the syndrome.

Until recently treatment had been empirical rather than scientific; in general it followed right lines and under conditions of emergency resolved itself into the war-time measures of morphine and rest to allay pain, blankets and hot-water bottles to give warmth, and hot sweet tea to supply fluid and mild stimulation. Undoubtedly prevention, and measures applied at an early stage, were more satisfactory than treatment of established shock. After the general comfort of the patient had been secured by rest, warmth, and morphine, active treatment was called for to deal with the fluid depletion; and in general the depletion of the blood volume in hæmorrhage or shock was best overcome by fluid from alimentary sources. intravenous infusion of saline was disappointing.

The gum-saline infusion of Bayliss was more satisfactory and should certainly be given in the presence of a blood pressure of 90 with a tendency to fall. There appeared to be no advantage in transfusing blood unless hæmorrhage had been the main factor in producing shock. In the natural anxiety to warm up the patient care must be taken to avoid excessive fluid loss by sweating—a fact sometimes overlooked. When active surgical treatment became necessary nitrous oxide and oxygen was undoubtedly the best of the general anæsthetics, with open ether in the second place. There were definite advantages in the use of local anæsthetic when applicable—especially in head injuries. No support had been received for the suggestion that spinal anæsthesia might assist the surgeon in dealing with a patient already suffering from shock.

THE ANÆSTHETIST'S PART

Dr. L. T. CLARKE said that the problem of surgical shock, or more particularly, its prevention, was an everyday matter for the anæsthetist. Formerly the usual prelude to an abdominal operation was a period of acute starvation punctuated by intensive purgation. The patient came to the table with his liver depleted of glycogen and his tissues dehydrated, and it was little wonder he suffered from shock. To-day pre-anæsthetic preparation was the antithesis of this, and the sedatives now in use had done much to eliminate psychic shock. It seemed a fine thing that a patient could be put into a deep sleep and so made unaware of the induction of anæsthesia.

Shock was a state of general depression and its main feature was a diminution in the volume of circulating blood. Where was the missing blood? Experiments on circulatory failure in frogs had shown that a large proportion of the blood stagnates in the liver. If, as was possible, this was also true of man, it followed that squeezing of the liver is a better method of resuscitation than cardiac massage, in that by driving the blood towards the heart it provides the natural stimulus to contraction—namely, distension. From the anæsthetist's point of view shock occurring during operation might be due to hæmorrhage, trauma, overdosage of anæsthetic, oxygen-deficiency, loss of body temperature, or length of operation. For hæmorrhage the surgeon could not be held wholly responsible: an ill-chosen anæsthetic might increase bleeding; for example, in radical amputation of the breast patients seemed to show less shock with chloroform and oxygen than with the more stimulating ether or the more congesting gas-and-oxygen. Trauma must be considered in the light of tissue destruction and nerve stimulation. Tissue destruction was the surgeon's province, yet here again the inadequate anæsthetic which failed to abolish muscle tone would cause him to be more traumatic than necessary. "I put my faith in deep anæsthesia," said Dr. Clarke; "fluctuating depths of anæsthesia invariably cause shock." In some types of operation nerve stimulation, with resultant reflex shock, could be obviated by nerve-block methods of anæsthesia. In these days of surgical diathermy it must be remembered that the diathermy electrode provides a point of intense local stimulation; the remedy was deeper general anæsthesia or some form of nerve-block. With regard to oxygen deficiency, the ill-effects of partial cyanosis over a long period could hardly be exaggerated; a clear airway was a vital necessity. The maintenance of body temperature, again, had a great influence on shock; draughts and unnecessary exposure must be avoided, but a too hot theatre was as bad as a too cold one.

A special problem arose when the patient was shocked before operation. Here there was a golden rule: the only case of shock that is not benefited by delaying operation is the one caused by active bleeding. Even here operation should be preceded by some attempt at fluid replacement, preferably by blood transfusion. The best anæsthetic in established shock was gas-and-oxygen. Spinal anæsthesia was to be avoided because it paralysed vasoconstrictor nerves. The solution of all problems was found in careful preoperative preparation, unfluctuating anæsthesia, and gentle surgery.

OPINIONS AND EXPERIENCES

Dr. STUART MCDONALD believed that the histamine theory of shock was now exploded. The shock-producing effects of protein-cleavage substances should be considered, as in intestinal obstruction, acute pancreatitis, &c. The blood volume changes were important in shock; 47 per cent. of the circulating fluid might be lost with a traumatised limb. The sympathetico-adrenal reaction was probably a defence mechanism in shock and not a direct cause. The vasomotor reactions might be regarded as an effect of stimulation of the vasodilator centre; or it might be that the vasodilator nerves were activated by acetylcholine in traumatic shock. The final collapse might be due to failure of the vasoconstrictor mechanism to allow of adequate medullary blood-supply. The influence of the nervous system was of great importance in shock.

Prof. BECKWITH WHITEHOUSE described some of his observations on obstetric shock. The element of fear, he said, was not uncommonly induced by comments in the press. In some cases the amount of trauma was negligible but shock was nevertheless severe. He recalled the case of a woman of excitable type who read medical literature and in whom demonstrable fear was exaggerated. She made her will the day before labour. She had a perfectly normal labour, but a short time afterwards she died of sheer fright. In gynæcological surgery, while a severe operation would cause shock in an unemotional patient, the apprehensive patient was a much more dangerous problem. The emotional factor played a large part in the relative frequency of deaths from illegal operations.

Dr. H. W. FEATHERSTONE stated that there were two causes of shock in simple dental gas anæsthesia—namely, asphyxia and preoperative fear. The patient might be cold, clammy, and feel ill for some moments afterwards. With spinal anæsthesia acute shock and collapse occurred. The speaker wondered whether the large bulk of dilute novocain solution injected in splanchnic anæsthesia might cause disturbance in liver function. During anæsthesia the Trendelenburg position was very favourable, whereas there was a real danger if the patient was on the face and the head raised.

Mr. BERNARD WARD thought there was no direct evidence against Crile's views on shock. Crile's kinetic theory was a very useful basis, and had profoundly modified the procedures used for prevention of shock. Nerve-block certainly minimised certain changes in the brain, liver, and adrenals, which otherwise followed trauma.

Prof. W. GEMMILL quoted cases of delayed shock. A boy playing football injured his humerus but continued to play, and after the game passed into profound shock. He believed the sympathetic nervous system tended to counteract shock.

The PRESIDENT wondered whether all the speakers had all spoken of the same condition. Were there

various syndromes of shock? In pneumonia or toxic scarlet fever a condition of circulatory failure simulating surgical shock was seen. He thought that a biochemical basis would eventually be discovered as the essential cause of shock. Fear might start the train of events but he doubted if it could initiate shock.

MANCHESTER MEDICAL SOCIETY

AT a meeting of this society on Nov. 6th Mr. H. H. RAYNER spoke on the

Treatment of the Enlarged Prostate

After tracing the development of prostatectomy since its establishment as a practicable operation about 1901, he pointed out that little improvement had been made in the technique until the last few years, though better results had been obtained because preoperative preparation had improved through the whole period. Even to-day, however, in his anxiety to improve the renal function before operation by drainage of the bladder, the surgeon sometimes inflicted the grave handicap of sepsis on the patient by faulty methods in the use of the inlying catheter or by failure to recognise in time that a particular case is unsuited to this type of drainage. During the last ten years there had been considerable advances in the actual technique of treatment; there was perurethral resection on the one hand and the refinement of the open operation introduced by Harris on the other. Harris's operation had really eliminated the chief objections to open prostatectomy—uncertain control of hæmorrhage and sepsis. According to modern views of the mechanism of urination, the opening of the vesical meatus is accomplished by a pulling backwards of its posterior lip. If this lip was thickened or rigid the opening was likely to be obstructed, and this was the explanation of classical symptoms of prostatic obstruction occurring when the prostate is not enlarged. In the treatment of patients with this type of obstruction perurethral resection must be regarded as the treatment of choice, for it gave results as good as the open operation, with much less trouble to the patient. Most surgeons preferred the open operation of enucleation for the patient with gross enlargement of the prostate, for the results were more certain and the risk little if any greater. But with a very infirm or broken-down patient who had lasting retention a very limited resection of a large prostate often succeeded in restoring voluntary micturition, and though this benefit might be but temporary it was clearly preferable in such cases to a radical operation.

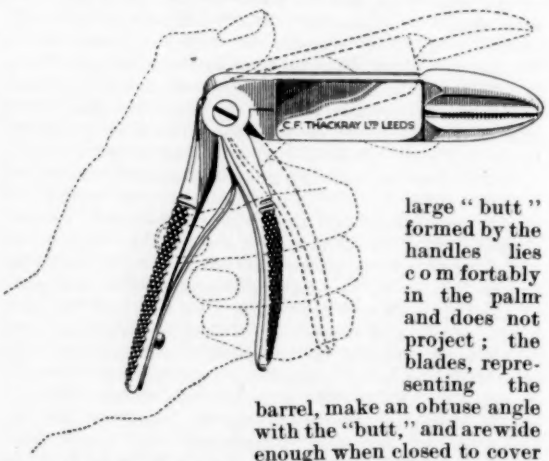
Open prostatectomy had received a great impetus from the Harris technique, the essential feature of which was the covering of the ragged walls of the prostatic cavity by the vesical mucous membrane. The advantages of this was assured hæmostasis without use of packing or bags; in consequence suprapubic drainage of the bladder after the operation was either dispensed with or employed for two or three days only with a fine-bore tube. Thus healing of the abdominal wound and restoration of natural micturition could be obtained within about a fortnight with considerable regularity. Mr. Rayner's experience of 19 such operations had led him to regard the method as standard and only to be departed from under exceptional conditions. Finally he pointed out that the personal attention of the surgeon and the services (almost whole-time) of an experienced nurse in the preparatory and after-treatment were as important as the technique of the operation; hence, in great part, the striking disparity between the results of the operation in private and in hospital practice.

NEW INVENTIONS

FORCEPS FOR ESTABLISHING ABDOMINAL DRAINAGE BY COUNTER-INCISION

THE simple act of draining the abdomen through counter-incisions can sometimes become exasperating when we employ ordinary clamps or forceps. These makeshifts do not protect the finger, though we cut down on them blindly; they are poor targets for the knife, and rarely fit the hand that must open and close them amid coils of gut. It is not surprising then that fingers are hurt, and drains fail to pass through inadequate openings. The best makeshift is a short Lane's tissue-forceps, but the dangerous fenestrations discount the advantage of its wide extremity.

I have therefore had made for me a special forceps that serves—like a pistol—for either hand. The



large "butt" formed by the handles lies comfortably in the palm and does not project; the blades, representing the barrel, make an obtuse angle with the "butt," and are wide enough when closed to cover and shield the index-finger which points along them.

Before cutting down through the abdominal wall on to the forceps, the tip of the index is slipped out from under the blades to feel for a spot free from gut on the parietal peritoneum. After finding the spot the finger can at once be replaced by the end of the forceps, which is grooved for the knife with a wide gutter, easily felt through skin and muscle. A spring keeps the blades apart, and when closed they overlap along their whole length so that there shall be no risk of the surgeon wounding his finger if he neglects to close them completely. The blades will not gape until the abdominal opening from which they emerge is large enough to admit a drain of average diameter. The pistol shape simplifies the excellent incision for posterior drainage advised by H. R. G. Poate in cholecystectomy (Jour. Coll. Surgs., Australasia, 1930, iii., 264) and, after interventions in the upper abdomen, a turn of the wrist will bring a suprapubic drain to the bottom of the pelvis.

I find that I can use this instrument safely with the complete assurance of drawing a tube into the abdomen at the first attempt. The instrument has been made for me by Messrs. Thackray Ltd. of Leeds.

A. K. HENRY, M.B. Dub., F.R.C.S. Irel.
Surgical Unit Kasr-el-Aini Hospital, Cairo.

REVIEWS AND NOTICES OF BOOKS

Great Doctors of the Nineteenth Century

By Sir WILLIAM HALE-WHITE, K.B.E., M.D., F.R.C.P., Consulting Physician to Guy's Hospital. London: Edward Arnold and Co. 1935. Pp. 325. 15*s*.

SINCE his retirement Sir William Hale-White has been spending some of his leisure pleasantly and profitably in writing a book and, as a true son of "Mark Rutherford," he has turned naturally to biography. The book contains 17 short biographies of great figures in nineteenth century medicine. The author's excellent method is to tell us first something about the man and secondly about what he did. Starting with Jenner, naturalist and country doctor, and ending with Sir Ronald Ross, poet and mathematician, we learn among many other things of the urbanity of Sir Astley Cooper and that Sir Charles Bell was not merely a great neurologist, but also a keen angler. Here is to be found an account of the life and work of that distinguished observer Richard Bright who, in addition to the disease which bears his name, first described chronic proliferative peritonitis and also Addison's disease (though he did not connect the latter with morbidity of the suprarenals). Others considered are Marshall Hall, who not only put an end to the practice of indiscriminate bleeding, but also gave us the theory of reflex action and a method of artificial respiration; Thomas Addison who, besides the two diseases called after him, first described appendicitis and inaugurated a system of case-taking by students at Guy's Hospital; Sir William Stokes, of the Stokes-Adams syndrome and Cheyne-Stokes respiration; Sir James Simpson, the obstetrician who introduced chloroform; and Sir James Paget, "the most successful man of his day," whose name, like those of Addison and Stokes, is associated with two distinct morbid conditions. Next come Sir William Bowman, histologist and ophthalmologist; Sir John Simon, the sanitarian who almost deduced the subsequent discovery of pathogenic organisms; Sir William Gull ("the physician in fashion though never the fashionable physician"), famous for his work on arterio-capillary fibrosis; and Sir Samuel Wilks, who not only demonstrated the visceral lesions of syphilis, but also rescued another's name from obscurity by putting Hodgkin's disease on the map. The remaining three articles deal with Lister, Hughlings Jackson, and Manson, names which could not properly be omitted from any such symposium. Naturally other famous figures cross the stage. Many receive more than passing notice from the author, and if most of his heroes are Guy's men none will blame him for his partiality. The reading is so agreeable that it is almost an impertinence to draw attention to certain eccentricities of punctuation or to the occasional harsh treatment of infinitives, but we feel sure that where "trite" is used on page 216, "terse" is really intended.

A book to be commended to doctors, laymen, and, above all, to medical students.

Tumours of the Urinary Bladder

By EDWIN BEER, M.D., F.A.C.S., Visiting Surgeon, Mount Sinai Hospital; Consulting Surgeon, Bellevue Hospital, New York City. London: Baillière, Tindall and Cox. 1935. Pp. 166. 16*s*.

THERE is no one better qualified to write on the treatment of bladder growths than Dr. Edwin Beer, for it was through his introduction of the high-frequency current in 1910 as a means of treating vesical papilloma that this valuable therapeutic weapon was first made available to urologists. The present work is the outcome of 25 years' experience of bladder growths. During that time he has employed all the available methods of therapy, and in the work under review he seeks to estimate their value and to show which method of treatment is indicated in a particular case. Results have been analysed and a basis for comparison provided from the statistics of the Mount Sinai Hospital, where most of the work was done.

In Chapter 5 Dr. Beer points out that there are six main methods of therapy available in a case of bladder growth; transurethral electro-coagulation; transurethral introduction of radon seeds; suprapubic cystotomy with excision or open diathermy; suprapubic resection of the involved bladder wall; suprapubic total cystectomy; deep X ray therapy; and a combination of these various methods. Of deep X ray therapy, Dr. Beer has very little good to report. He has never seen a case cured by such means and regards it simply as a method of treatment for intractable hæmorrhage. In general his opinion of other methods of treatment harmonises with that voiced at the International Congress of Urology held in Brussels in 1927 and the French Urological Congress in 1932. Perhaps his view of the dangers and curative value of total cystectomy is less pessimistic than was that of the majority of surgeons speaking at these congresses, but it is only in matters of detail that his views differ from theirs.

The work is provided with the most complete bibliography of the literature of bladder growths that we have seen in any text-book. This bibliography takes up 26 pages and should prove of great value. The illustrations are excellent and include eight coloured plates.

Mucous and Salivary Gland Tumours

A Clinical Study with special reference to Radiotherapy, based on 254 cases treated at Radiumhemmet, Stockholm. By HUGO E. AHLBOM. Stockholm: Kungl. Boktryceriet. P. A. Norstedt & Söner. 1935. Pp. 452. Swed. Cr.20.

DURING the years since the foundation of Radiumhemmet in Stockholm a number of monographs on malignant tumours have been published by the staff, and this latest addition takes a worthy place in the succession. Dr. Ahlbom begins with a careful review of the pathology of the tumours of the salivary glands; and the large number of references and very varied opinions quoted show that the question presents many difficulties. He accepts Ewing's view that the tumours are epithelial in origin, and the excellent illustrations of histological sections support this contention despite the rather misleading designation of fibro-myxo-chondro-epithelial tumour. The division into benign, semi-malignant, and malignant tumours would appear to be undesirable from the point of view of classification, though clinically it may be convenient. Much space is devoted to the discussion of the relation between the histological findings and the clinical symptoms. The experience gained from the treatment of 254 cases makes this section a striking reminder of the various lines along which these tumours, mostly of slow evolution, may develop, and the varied, and sometimes surprising, symptoms to which they may give rise. Differential

diagnosis is from tuberculosis, actinomycosis, inflammatory conditions, and salivary calculi, and between tumours of the histological types described. For this purpose a preliminary course of radiation may be used, the radio-sensitivity of the tumour giving an indication of its type. If biopsy is performed it should follow radiation, and the necessity of care in selecting the material for examination is emphasised.

The most interesting section is that on treatment. Surgical excision is still frequently chosen and follows the usual lines, complete removal of the capsule being considered essential. The diathermy knife may be used for excision, but more often the tumour with the surrounding tissue is coagulated by means of the endotherm and left to slough spontaneously. After surgical treatment, unless the tumour is benign, radium is inserted into the cavity, either immediately or later, but the wound is primarily sutured as far as possible. Tubes containing 25 mg. of radium of 15 to 20 mm. length and 3 mm. diameter are used, screened with a layer of 2 to 3 mm. of lead covered by a thin layer of dental compound so that the radium to tissue distance cannot be less than 4 to 5 mm. The radium is usually left in for 24 hours, but doses vary from 300 to 1800 milligramme hours, and are usually supplemented by external radiation. This may be given with Sievert's teleradium apparatus containing 3 grammes of radium with a skin distance of 6 cm. and filtered by 6 mm. of lead. 40 gramme hours are given to one field in one to two weeks, producing a reaction of the order of epidermitis exsudativa.

Radiumhemmet has not yet accepted the r unit for radium dosage, preferring to express this as Imc hours, but the use of Sievert's condenser chambers allows of accurate measurement, and as the Imc bears a definite relation to the r unit (the latest figure given by Mayneord is one Sievert unit equals 8·3 r units) comparison with the doses given elsewhere is easy. With X ray therapy the method is "simple fractional radiation"; 200 to 600 r per day, measured on skin, are given, 10 by 10 or 10 by 12 being the usual size of field. The total dose per field is 3000 to 5000 r.

The results in "semi-malignant" tumours treated surgically show 17 per cent. of recurrence up to 5 years with 4 deaths in 32 cases; with the addition of radiotherapy there were no recurrences in 5 years. The uncertainty of the diagnosis, however, makes this of little significance. In the frankly malignant cases 25 per cent. of 93 cases survived 5 years, and some interesting statistics for the different methods of treatment are given.

Besides the microphotographs there are some excellent clinical photographs and paintings.

A Guide to Human Parasitology

For Medical Practitioners. Second edition. By D. B. BLACKLOCK, M.D. Edin., D.P.H. Lond., D.T.M. Liverp., Professor of Tropical Hygiene, Liverpool School of Tropical Medicine; and T. SOUTHWELL, D.Sc., Ph.D., A.R.C.Sc., F.Z.S., F.R.S.E., Walter Myers Lecturer in Parasitology, Liverpool School of Tropical Medicine. London: H. K. Lewis and Co., Ltd. 1935. Pp. 260. 12*s.* 6*d.*

THE authors of this book have done what they set out to do—namely, to give a clear account of the common pathogenic parasites of man in all climates, with descriptions of methods of diagnosis which are quickly learnt and easily carried out. They take the reader over the care of the microscope and its use for examination and measurement; they discuss adequately the preparation of material; they describe protozoa, worms, and fly larvæ in sufficient detail; and they give in addition one series of valuable tables on the diagnosis and spread of parasites, and another of diagrams which set out most clearly their life-histories. There are a few omissions, notably that of trichostrongylus infection, which is not uncommon; the failure to recognise its eggs has brought discredit to the doctor and depression to his patient. The unqualified statement is made that unfertile ascaris eggs are present because the host harbours only female worms; but the experience of G. F. Otto and of A. E. Keller over two large series of cases has been that unfertile eggs mixed with fertile ones are present in over 40 per cent. of cases. There is no mention of the large dorsal tooth of necator. The book is clearly written and well illustrated, and attention has only been drawn to a few matters needing revision in a third edition because of its general excellence and reliability.

The Psychology of Everyman

Nerves and the Masses. By Dr. GEORGE DEVINE. London: Hutchinson and Co., Ltd. 1935. Pp. 319. 16*s.*

ASTONISHMENT is sometimes expressed that so much antagonism and distrust of medical psychology should be shown in certain orthodox quarters. This book serves in part to explain such an attitude towards what is actually a respected and established branch of medicine. Here are the over-confidence, the carelessness about evidence, the assertion of personal opinion, the mixture of knowledge and guesswork, the looseness of language, and the appeal to popular sentiment which antagonise serious doctors, and to which the subject still lends itself in the hands of enthusiasts. "Subconscious psychic force," for example, is here invoked to explain enfeeblement of the "Dormant Personality Unit"; as treatment "Mental Catharsis" is proposed, making use of the "Escape Mechanism"; conjoined with it is the exhibition of unspecified "Hormones" to help in "building up the nervous system of the psychoneurotic." If the book presented current teaching about mental disorder, using the term in the widest sense, then its far from sober style might be condoned; but many of its pronouncements cannot be reconciled with sound psychiatric opinion. Since there are already so many works which give trustworthy accounts of the present state of knowledge in this field, Dr. George Devine's book cannot be recommended.

Handbook of Bacteriology for Students and Practitioners of Medicine

Fourth edition. By JOSEPH W. BIGGER, M.D., Sc.D. Dub., F.R.C.P.I., D.P.H., Professor of Bacteriology and Preventive Medicine, University of Dublin. London: Baillière, Tindall and Cox. 1935. Pp. 458. 12*s.* 6*d.*

A NEW edition of this popular handbook issued three and a half years after its predecessor shows signs of extensive revision, though the size of the book has not been increased. No work on the subject covers more successfully the range of knowledge in bacteriology required from the student aiming at a qualification in medicine and the practitioner will find that it meets all his reasonable needs.

THE LANCET

LONDON: SATURDAY, DECEMBER 21, 1935

PLEURAL SHOCK AND/OR AIR EMBOLISM

Two bogies, remote but terrifying, attend on acupuncture of the thoracic wall. Dr. W. F. HAMILTON recently presented[1] to a combined meeting of the American and Canadian Medical Associations a careful analysis of 34,060 such punctures collected from American and German sources among which there were 112 accidents and 12 deaths. He excludes from this series a remarkable record[2] of M. BORSCH and D. WIDRÉ who made 13,932 punctures on 890 patients with only 12 accidents and no death. Sudden pain, even the touching of a part unused to touch, may, it seems, in rare instances cause syncope or sudden death, but, we may fairly presume, only in those whose constitutions are in a peculiar state. Fatal syncope has been recorded not only during pleural puncture, but even in such simple procedures as digital examination of the rectum. An editorial article in the issue of the Canadian journal containing Dr. HAMILTON'S article states that pleural shock is rare, although not all the cases that occur are reported, while it quotes Dr. C. H. COCKE'S reiterated opinion[3] that air embolism is rare and pleural irritation relatively common as a cause of shock. Something may well depend on the technique. Done in the manner in which pleural puncture is sometimes performed—with blunt or turned instruments, badly made trocars and cannulas, failure to find the intercostal space leading to impact of steel on rib, neglect or imperfect use of local anæsthesia—it may well be that syncope sometimes occurs, and perhaps syncope is sometimes nearer death than we know. Yet there are those in this country who have punctured the chest thousands of times in all types of case and at all ages, without encountering serious shock; the careful clinician, aware of its possibility, endeavours to prevent it by employing every measure to prevent pain or sudden sensation. At the Victoria Park Hospital, where some five thousand refills are given each year, only one case of so-called pleural shock has occurred—and that not fatal. Novocain had been used but there was difficulty in finding the air space.

Air embolism, on the other hand, appears to be less uncommon in this country. Many instances have been recorded in which embolism was proved for certain by physical signs such as hemiplegia and by post-mortem demonstration. It is curious that it should not occur more often in inducing a pneumothorax. The fear of it led Prof. E. RIST to advocate oxygen for induction; but oxygen is not generally used for the purpose in this country, doubtless because so few cases of air embolism are met with at this stage. It is rather during refills that the disaster occurs. There is no mystery, as a rule, about its mechanism. A pulmonary vein is punctured or lacerated; air enters from the instrument, from the pleural cavity, or possibly from the lung; it is drawn into the left heart, and then travels by the aorta to various destinations. If air embolism happens during a refill it must mean that either an adhesion or the lung itself has been punctured. This is one good reason for inducing local anæsthesia as a preliminary to every refill; not only to avoid pain and possible shock, but to make sure that there is an air space and a free air space. If a long slender needle is pushed gently into the pleural cavity, and air withdrawn through it into the syringe, it is practically impossible for air embolism to occur; whereas if the refill needle when inserted is attached to the tube of the apparatus there is nothing to prevent a considerable quantity of air being aspirated if its point should enter a branch of the pulmonary vein. What happens then is a question of chance. If a little air goes to a muscle, probably no symptoms are produced; if the same amount reaches the brain or the coronary arteries, serious symptoms will be produced. Larger quantities of air entering the pulmonary vein may cause death from disturbance of the heart's action when they reach the left chambers. Post mortem, however, it may be difficult or impossible to demonstrate small quantities of air in the coronary artery, and death is wrongly attributed to pleural shock. All this being borne in mind, in every case where there is or may be difficulty in finding the pneumothorax, the careful operator will introduce the refill needle on the end of a syringe. Air then cannot be drawn into a vein from the apparatus.

If as seems probable, owing to careful technique, both pleural shock and air embolism are now rare accidents of thoracic puncture, they may well be avoided altogether by still more careful technique.

[1] Canad. Med. Assoc. Jour., October, 1935, p. 370.
[2] Beitr. z. Klin. d. Tub., 1928, lxix., 324.
[3] Amer. Rev. Tub., 1931, xxiv., 545, and 1935, xxxi., 404.

TRICHOMONAS VAGINITIS

OF late years much more notice has been taken of the flagellate protozoon *Trichomonas vaginalis*. What does its presence in the vaginal secretion signify? Some authorities think the organism identical with its neighbour of the lower intestinal tract and also with the *T. buccalis* sometimes found in the mouth and the throat. The suggestion is therefore made that the vagina is infected from the anus—possibly in mechanical fashion through the custom of cleansing the anal region from behind forwards. On the other hand, it is quite certain that the trichomonas can dwell in the vagina without giving rise to symptoms and signs of infection. Hence it is often regarded as a normal vaginal inhabitant which may become pathogenic under abnormal circumstances.

Whatever the true ætiology, there is no doubt that the condition termed "trichomonas vaginitis" is a clinical entity with characteristic features. The onset is usually acute: the vaginal discharge

is profuse, greenish-yellow, frothy, and malodorous. Vulvar itching and burning are common, and severe intertrigo of the skin of the vulva and thighs may develop. Clinically the picture is that of acute vaginitis, and examination of a fresh specimen of the discharge shows leucocytes, epithelial cells, bacteria, and large numbers of active flagellate protozoa. The question arises: why this sudden pathogenic activity on the part of an often harmless parasite? The answer most in favour is that something has happened to reduce the local immunity of the vaginal wall. HIBBERT [1] and HESSELTINE [2] have provided evidence that the additional element is infection by a non-hæmolytic streptococcus; indeed the latter thought the pathogenicity of *T. vaginalis* unproven and deemed it a scavenger which feeds upon bacteria. ALLEN, JENSEN, and WOOD [3] now bring forward their reasons for believing that the vaginitis is due to symbiosis between a streptococcus and the trichomonas protozoon. They note that the symptoms vary considerably and that the typical clinical picture is not always seen. Symptoms referred to the bladder and the urethra—such as frequency, dysuria, nocturia, and even incontinence—may be so pronounced as to mask the vaginal source of the infection. This fact has already been emphasised by others, particularly by SAYER,[4] who believes that the bladder forms the "residual habitat" of the parasite from which reinfestation of vagina and vulva occurs. ALLEN and his colleagues state that about a quarter of their patients develop menorrhagia, occasionally associated with metrorrhagia, and they attribute this to pelvic cellulitis resulting from upward spread of the streptococcal infection. The strains of streptococci which they were able to isolate from the vaginal secretions were of the green-producing type, and they were classified according to the curves of their electrical potential as estimated by their rate of movement towards the anode when in suspension in a cataphoretic cell through which an electric current was passed. In this way it was shown that their electrical grouping was different from that of streptococci isolated from the normal vagina and from the naso-pharyngeal and tonsillar regions. The groupings of streptococci obtained from various infections with *T. vaginalis* were closely similar.

Examination of the male contacts of some of the patients gave interesting results. Seven showed evidence of chronic prostatitis and from the prostatic secretions a streptococcus was isolated which showed electrical reactions similar to those of the organisms obtained from the vagina. In six of the male contacts the trichomonas was actually recovered from the prostatic secretions, and in only three of those examined was it impossible to find either trichomonas or streptococcus. The investigators emphasise the regularity of this association of coccus and protozoon and regard sexual intercourse as the most likely means of transferring the infection. They hold that both trichomonas prostatitis and trichomonas vaginitis may well be added to the list of venereal diseases; and while these conclusions are not entirely acceptable on the evidence so far collected, it looks as though further investigations of this kind would soon make the nature of the infection much clearer.

[1] Hibbert, G. F.: Amer. Jour. Obst. and Gyn., 1933, xxv., 465.
[2] Hesseltine, H. C.: Ibid., 1933, xxvi., 46.
[3] Allen, E., Jensen, L. B., and Wood, I. H.: Ibid., 1935, xxx., 565, 736.
[4] Sayer, J. H.: Northwest Medicine, 1931, xxx., 278.

CONTROL OF MYOPIA

THERE has been a growing tendency to take a somewhat fatalistic view of myopia and to belittle the influence of school hygiene on its incidence. Whatever view we may take of its causation, however—and without doubt the factors that play a part are various and differ in different cases—the belief doubted by some but still unrefuted holds the field, that prolonged application to close work by children and young adults with a tendency to myopia, acquired or inherited, leads to its increase. Among ophthalmic surgeons the share taken by excessive convergence in the causation of myopia is still in dispute. Mr. BISHOP HARMAN has no doubt of the harm done by prolonged close eye work, in susceptible children, or of the value of controlling eye work in myopes.[1] Sir JOHN PARSONS, on the other hand, doubts whether a reasonable amount of near work under good hygienic conditions does any harm to low myopes [2]; and there are some who believe that myopia is neither originated nor increased by near work.[3] Those who argue in this way are fond of pointing to certain cases, or classes of cases, where the main cause of the origin or increase of myopia is certainly not near work—e.g., cases where the hereditary element is strong, cases of monocular myopia, myopia in such persons as agricultural labourers who have never been studious. There is also the so-called anterior myopia where the trouble lies not in a yielding sclera but in the cornea or the lens. No one maintains that prolonged convergence is the sole cause of myopia, but only that in the majority of cases, and especially in what is known as school myopia, excessive book work is an important contributing cause.

The mechanism of production is equally in dispute. In the middle of the nineteenth century DONDERS and his successors thought that prolonged accommodation weakens the resistance of the sclera to intraocular pressure; but this idea was proved to be fallacious. It was then argued that pressure of the external eye muscles and especially of the superior oblique, active in convergence, was the explanation; but this has never been proved. Dr. EDWARD JACKSON holds a somewhat different view [4] of the mechanism of convergence in lengthening the axis of the myopic eye. The main obstacle to free movement of the eyeball, he points out, is the rigid optic nerve, firmly attached to the sclera. In convergence this resistance is constantly added to that of opposing muscles and other tissues. The forces

[1] THE LANCET, 1933, i., 129.
[2] Ibid., 1933, ii., 796.
[3] Brit. Med. Jour., 1919, ii., 420.
[4] Jour. Amer. Med. Assoc., Nov. 2nd, 1935, p. 1412.

meet around the attachment of the optic nerve, but the effects produced on the temporal and nasal sides are different. On the nasal side the tissues are jambed together by the turning in of the eyeball, while on the temporal side of the nerve entrance they are stretched. It is on this side that ophthalmoscopic signs of progressive myopia are nearly always found, beginning with the typical myopic crescent and going on to choroidal disturbances between the disc and the macula. JACKSON'S hypothesis is at any rate plausible and is in accordance with the fundal changes in a great many cases. If it is true, the obvious necessity is to prescribe spectacles for constant wear which by correcting the myopia, together with any astigmatism present, put the eye in the same condition as that of an emmetropic eye—removing the temptation to undue convergence without interfering with the ordinary education. This is in fact the usual present-day practice. But it might be difficult to produce statistical justification for it. The steady increase of myopia during school life no longer counts as evidence, and some recent observations[5] on the increase of myopia in Japan, where it is said to have more than doubled among school-children in the last twenty years during which time the strain of competitive examinations has continually grown, are similarly unconvincing. Dr. JACKSON himself sets out the results of full correction, drawn from 381 of his own private patients watched during a number of years, but obviously he could not check his results by comparison with a similar series of myopes treated by himself on a system in which he did not believe.

No one denies the influence of factors other than excessive convergence in the production of the myopic eye, but it so happens that excessive convergence can be corrected whereas the others cannot. With our present knowledge (or ignorance) it would be unwise to tamper with the principle on which most young myopes are now treated or to discourage efforts to secure special care for myopic children. Besides the wearing of fully correcting glasses this of course includes the correction of any faulty habits of posture that the child may have acquired, but not the attempt to limit the effort of accommodation required in ordinary life.

[5] Ibid., Oct. 26th, 1935, p. 1336.

ANNOTATIONS

RICHET AND ANAPHYLAXIS

THE present age imposes specialisation and demands broadmindedness, and its motto may be said to be "live and let live," a comfortable but sometimes dangerous precept for the scientific research worker. The passing generation did not admit this philosophy; William Bayliss wrote, "my experience teaches me that it is better to hold a well-understood and intelligible opinion, even if it should turn out to be wrong, than to be content with a muddle-headed mixture of conflicting views, sometimes miscalled impartiality, and often no better than no opinion at all." The many-sided life of Charles Richet (of whom a biographical sketch appeared in our last issue, p. 1380) is one of the best examples of this point of view translated into tireless activity; wherever his interest rested, there it begat independent investigation. How many bacteriologists, even with the most catholic interests, would have thought of investigating the toxic properties of the tentacles of the sea-anemone? How many physiologists, having isolated the toxin, would have tested the power of a non-fatal dose to confer immunity to subsequent injections? Yet one has only to glance at the researches of Richet carried out during the last 25 years of the nineteenth century to realise that for him nothing would be more natural. It was not altogether accident which led to the surprising discovery that a fortnight after administration of the toxin a dog was not less but more sensitive to a subsequent dose. This phenomenon was described by Portier and Richet in 1902 and called *anaphylaxis* on account of its being apparently the reverse of immunity. The term has passed into general usage, but Richet lived to see the simple conception from which it sprang fade far into the background. Obviously connected in some way with immunity and allied phenomena, the subject aroused much interest and gave a new impetus to research; in 1912 Richet published a monograph "L'Anaphylaxie," and in 1913 he was awarded the Nobel prize for medicine. In spite of the enormous amount of work which has been done since then, no theory has been entirely successful in explaining the fundamental reason why the second injection of a foreign protein should cause anaphylactic shock, but the side issues which have been raised have proved fruitful in many directions. Whatever the explanation ultimately accepted, it must also account for, or help to account for, other manifestations of hypersensitivity, from the tuberculin and similar reactions to everyday afflictions such as urticaria, asthma, and hay-fever, and its precise relation to the phenomena of immunity must be revealed.

RECOVERY FROM CORROSIVE POISONING

LAST year Prof. H. Salzer of Vienna published a paper[1] on corrosive burns of the œsophagus and their early treatment by dilatation. In support of such early treatment he stated that 163 of his 180 cases terminated in recovery. This paper has now drawn a well-documented answer and criticism[2] from Prof. S. Bélinoff of Sofia. During the past five years he has treated an average of 55 cases of corrosive œsophagitis every year; 170 of his 274 cases were acute, the rest were chronic. The 170 acute cases were classified in three groups, according as they were (1) so slight as not to require treatment, (2) so severe that they were fatal before treatment could be instituted, and (3) of moderate severity. The number of cases in these groups was 18, 46, and 106 respectively. If only the 106 patients who received treatment be considered, recovery or improvement could be claimed in 73 per cent., while the mortality was 23 per cent. Salzer's recovery-rate of 89 per cent. must be considered in the light of the fact that all his patients were children, whereas only 20 of Bélinoff's were children under the age

[1] Wien. med. Woch., June 30th, 1934, p. 736.
[2] Presse méd., Oct. 9th, 1935, p. 1564.

of 15. Now there is a good deal of difference between the corrosive poisoning of children and that of adults. The former take corrosives by accident, spitting them out promptly, and seldom swallowing much. The corrosive poisoning of adults is usually an attempt at suicide, large quantities of corrosive being swallowed, and the resulting burns are comparatively severe. The œsophagus of a child is more elastic than is the adult œsophagus, and the natural growth may widen the lumen; this again is a factor affecting prognosis. Bélinoff, who does not begin to dilate the œsophagus till some seven to ten days after a burn, and who uses apparatus specially designed for the purpose, pleads for the use of a common denominator when the merits of various methods of treatment are compared. Before any claim can be made on behalf of some treatment or other, the claimant must state the age of his patients and classify them according to the severity of their burns. If he does this and eliminates the patients requiring no treatment and those who die before any treatment can be given, he should have a uniform residuum wherewith to compare his therapeutic achievements with those of other observers.

CORYZA AIGU BANAL

THAT when there are many remedies there is no cure is now a proverb; that doctors cannot cure a cold is a gibe to which we have grown accustomed, if not resigned. In an unusual spirit of optimism the editors of the *Vie médicale* devote their latest symposium[1] to the evergreen problem of coryza. Twenty-two distinguished physicians and laryngologists give their views on the subject; but alas their wide diversity neither refutes the proverb, nor provides an effective retort to the gibe. Dr. P. Aubriot, of Nancy, divides the common cold into two phases, the vasomotor and the infective. It is only in the former, and shorter, phase that treatment may abort the disease. He advocates the use of pilocarpine but does not disclose how, when, or in what dose it is to be given. While not denying the importance of microbic infection and its transmissibility by sneezing, coughing, and so forth, he considers that "only those with pituitaries which are sensitive owing to habitual or transient vasomotor instability" will develop the disease. Dr. J. Baratoux recommends, among other measures, the Chinese treatment called *Ro-kou*, which consists in thrusting a needle several millimetres deep into the dorsum of the hand between the thumb and index-finger. Which hand is not specified; nor is it stated whether the doctor's tongue should be in his cheek whilst carrying out this procedure. Many of the contributors regard prophylaxis as the better part of therapy. Thus, Dr. Carréga, of Marseilles, bids us avoid carriers—a counsel of perfection indeed. Dr. Labarrière would have us avoid draughts and cold feet, while Dr. Debidour believes in cold baths and in accustoming the body to cold, a belief shared by Drs. J. Tarneaud and J. Vialle. Again, while Dr. Vialle would "combat endocrine dysfunction," Dr. A. Soulas would "treat the general condition." Dr. Berger likes vaccines, and the correction of nasal deformities is supported by Drs. G. Toitot, A. Bloch, Soulas, and Tarneaud, all of whom, mirabile dictu, are oto-rhino-laryngologists. As to drugs, for both local and general use, their name is legion. Ephedrine, adrenaline (with or without stovaine), aconite, belladonna, silver salts, magnesium chloride, and urotropine all have their champions. "Purge first" is the advice of Drs. Jacques and Bloch. Dr. Rachewsky gives morphia; Dr. Jacod, opium. Quinine has two votes; the salicylates three. Menthol is curiously unpopular; Dr. Batier finds that it "provokes reactive congestion," and Drs. Debidour and Leroux-Robert that "it is a generator of laryngeal spasm." Diathermy, infra-red rays, and antivirus therapy are also mentioned. Dr. Leroux-Robert has heard of a way of aborting a cold by inhaling a mixture of equal parts of ammonia, tincture of iodine, carbolic acid and alcohol but "does not know the result of this method." It is with relief that we are able to record that none advocates the wearing of an iodine locket, the hanging of garlic outside the bedroom window, or the draping of the counterpane with a string of onions. After reading the symposium, we are forced to the conclusion that the treatment of the common cold is not one of the many things they order better in France.

[1] Vie méd., Oct. 25th, p. 891.

OBSESSIONAL ILLNESS

PSYCHOPATHOLOGY has received much more attention of late years than any other aspect of neurosis; it has sometimes seemed as though no other aspect was thought deserving of attention. In a paper on the problem of obsessional illness, read before the psychiatric section of the Royal Society of Medicine on Dec. 10th, Dr. Aubrey Lewis indicated the wider range of questions raised by one of the typical neuroses. He pointed out that in the causation of the symptom it was usually possible to discover the mechanism determining the content of an obsession in any individual case, but that these mechanisms were not limited to obsessional illness nor characteristic of it. To go further, one might with the Freudians take certain unprovable premises—Freud had himself called the theory of instincts a mythology—but one could not at present elucidate the special psychopathology of this disorder otherwise than speculatively. The ways in which at various stages of life the obsessional tendencies had manifested themselves was an object of study which had been little pursued, especially in normal persons. The character usually described as obsessional was not infrequently found in those who developed other types of mental illness. The relationship of obsessional neurosis to melancholia and schizophrenia was a frequent observation, which had been little reckoned with. Still more complicated was the issue raised by the occurrence of obsessions after an attack of encephalitis lethargica in persons who had been free from any such traits beforehand. A purely psychological interpretation was here impossible; one had to consider the influence of motor disorders on the structure of the personality as well as the specific cerebral damage, though one would avoid crude efforts at localisation of function.

In any approach to the problem of causation, the psychiatrist is being pushed back to constitution, or, more strictly, heredity as the indispensable factor. In a detailed study of the families of 50 obsessional patients, Dr. Lewis found pronounced obsessional traits to be widespread among the parents and siblings; such data could not, however, be evaluated without comparable investigation of the average population and others. Twins would provide valuable information, but the number of cases was still too small. Prognosis and treatment are generally regarded with much gloom; nothing but psychoanalysis lasting for years can, in the opinion of some, do any permanent good. In order to find out what grounds there might be for such pessimism, Dr. Lewis took 50 patients from the records of the Maudsley

Hospital and pursued inquiries into their subsequent history, which covered from five to ten years. These patients were a fair sample of obsessionals taken at random; various forms of treatment, including intensive psychotherapy, had been used. Two of the patients had come only once to the hospital and had no subsequent treatment; one of them was now much worse, the other had been quite well for ten years. Half the patients had been well for five years or more; some others had been well for years but had had a recurrence from which again they recovered. The results did not prove any better outcome from one mode of treatment than from another; many factors entered into this, and in some cases it seemed clearly to be external circumstances that had effected a change. In one case, obsessional symptoms which had been very severe disappeared entirely during the war, to return afterwards. The findings did not indicate that psycho-analysis was the treatment of choice; in many instances it would have been superfluous and unwarranted.

For the prospect of recovery Dr. Lewis finds neither the content of the obsessions nor the patient's age to be the ruling factor. The likelihood of an obsessional patient carrying his impulses into action, and so coming into conflict with society, is small. Suicidal attempts happen because the patient is also depressed; they are seldom the expression of an uncontrollable obsessional impulse. Murder and sexual offences cannot be included in the category of obsessional actions; there were essential differences clinically and psychologically. In his concluding remarks Dr. Lewis emphasised the need for detailed clinical study if the problem of obsessional illness is to be solved.

INTERVAL BETWEEN PRIMARY AND LATER MANIFESTATIONS OF TUBERCULOSIS

Prof. Arvid Wallgren, whose studies of erythema nodosum and tuberculosis in Göteborg have been conducted over many years, has now, with Dr. A. Lundblom,[1] tried to estimate the average interval between the first manifestation of a tuberculous infection (erythema nodosum) and three later manifestations—namely, meningitis, pleurisy, and tuberculosis of the bones. Wallgren's earlier investigations have shown that the incubation period of tuberculosis—i.e., the interval between infection and the appearance of erythema nodosum—is between three and eight weeks, usually between five and six. In a series of 111 cases of serous pleurisy preceded by erythema nodosum it was found that the interval between the appearance of these two conditions was usually 3–6 months. In 64 cases of tuberculous meningitis preceded by erythema nodosum the interval between the two was usually less than three months. These observations suggest that the chances of erythema nodosum being followed by tuberculous meningitis diminish rapidly three months after the appearance of the erythema, and that the chances of pleurisy diminish after the sixth month. The child who develops tuberculous pleurisy as a sequel to erythema nodosum is, therefore, almost out of the wood so far as the chances of developing tuberculous meningitis are concerned. In support of this calculation it is noted that in a children's hospital in Göteborg, in which 400 children have been treated for pleurisy since 1922, only 2 have subsequently developed tuberculous meningitis. In coöperation with the staffs of other Swedish hospitals, Wallgren and Lundblom have now extended their studies to tuberculosis of the bones; and in 115 such cases they find that the interval between the onset of erythema nodosum and the first signs of tuberculosis of the bones and joints was a year or less in about half, two years or less in about three-quarters, and under three years in almost all. In other words, the child who develops erythema nodosum is not likely to develop meningitis if he has not done so within three months, pleurisy if he has not done so within six months, or tuberculosis of the bones and joints if he has not done so within three years. The survey ends with a study of 2031 cases of tuberculosis of the bones and joints which shows that this condition usually comes on between the ages of 6 and 30, the highest rates being between the ages of 16 and 25 when the opportunities for infection are greatest.

[1] Nord. med. tidskr., Oct. 26th, 1935, p. 1699.

JOHN WHITRIDGE WILLIAMS

"Ease, grace, and dignity were the symbols of his habitual self-control. He seemed to do as he liked without restraint, confusion, or awkwardness." Dr. Morris Slemons has chosen these words from Hazlitt's essay on the "Look of a Gentleman" to describe John Whitridge Williams, to whose work and personality he paid tribute in a presidential address to the Pacific Coast Society of Obstetrics and Gynecology on Nov. 9th. The lecture has now been published in book form,[1] and as the story of Williams's career as obstetrician and administrator is also the story of the department of obstetrics and of the introduction of a system of whole-time teachers at the Johns Hopkins Hospital, it has a general as well as a personal interest. Williams served the hospital for over 40 years, being appointed associate professor of obstetrics in 1896 and professor in 1899. He was twice offered high positions in other cities, but each time he was persuaded to remain, once by the establishment of obstetrics as a whole-time department and once by the founding of the Women's Clinic. At the Johns Hopkins Hospital circumstances had made the separation of obstetrics from gynæcology inevitable, but in an interesting discussion of the system Dr. Slemons makes it clear that Williams himself did not approve of it. A bibliography of Williams's writings up to his death in 1931 is supplied, and his work on the investigation of the problems of placentation, the funnel pelvis, and prenatal care is discussed in some detail.

THE NERVOUS FACTOR IN DECALCIFICATION

Mario Coppo[2] thinks that the possibility of a nervous control of calcium metabolism in bone has been too summarily dismissed—notably by Leriche and Policard. He himself believes that such control exists, and he visualises the responsible nerve-fibres as leaving the spinal cord by the lateral horns in company with others having a trophic function. He argues that such regulation of metabolism is in line with the nervous control already suggested for glycogen-glucose equilibrium, and for the trophic changes in muscular and adipose tissues. The factors predisposing to, or determining, decalcification of bone he divides into general and local. Under the former heading he lists such conditions as hyperparathyroidism, deficiency of vitamin D, obesity, and (doubtfully) acidosis. Under local causes he includes immobilisation and tuberculosis of bones and joints.

[1] John Whitridge Williams. Baltimore: The Johns Hopkins Press. 1935. Pp. 109. 7s.

[2] Paris méd., 1935, xxv., 110.

Looking for a single underlying cause, Coppo finds it in the nervous factor: decalcification, in fact, he regards as a trophic phenomenon. In support of this he relates the results of experiments in which he estimated the mineral content of bone previously submitted in situ to the action of ischæmia, stasis, nerve section, immobilisation, and the proximity of an abscess. Nerve section, he says, led to definite and constant mineral loss within 10–15 days, whereas none of the other factors, operating over the same period, had any effect on the mineral content of the bone. The conclusion drawn is that the nervous factor is alone of importance, and that all other causes of decalcification act through their influence on the trophic nerves. This sweeping generalisation, however, will not be readily accepted; for there are reports by other workers to the contrary.

THE CALCULATION OF BASAL METABOLIC RATE

Dr. T. J. F. Frank, of Melbourne, has recently made an exhaustive and impartial investigation into the claims of three formulæ for the estimation of basal metabolic rate (B.M.R.) on the basis of pulse-rate and pulse-pressure values.[1] In 250 patients he has compared the result obtained from gasometric analysis with those calculated from the formulæ, and has shown that the latter are extremely inaccurate. The danger of using them for diagnostic purposes is emphasised by the inclusion of 43 patients who had complaints which left the basal metabolic rate unaffected, but which simulated thyroid disease in various ways. In 17 of these patients the calculated B.M.R. differed by more than 20 per cent. from the normal, and in some of them might well have led to a false diagnosis of hyperthyroidism and to surgical treatment. The remaining 207 patients mostly suffered from various forms of hyperthyroidism, but included 5 cases of hypothyroidism. Dr. Frank has tabulated his results according to the pathology of the complaints, and has regrouped them on the basis of the degree to which the B.M.R. (as measured gasometrically) was raised. In no group, classified by either of these methods, is there any striking agreement between the formulæ and gasometric determinations. The former are no safer in either slight or severe cases, whatever the basis of diagnosis. There is rather more to be said for the formulæ as giving comparative results in the same patient, and in some cases, if a preliminary gasometric determination is made simultaneously with pulse and blood-pressure readings so as to estimate the disparity between the two methods, the patient's progress may be followed roughly by periodic calculations from the formulæ. This is by no means always true, and the figures given for 6 cases followed by Dr. Frank are not encouraging. It may be contended that the gasometric method itself is not very accurate under clinical conditions, but the error here lies in the actual determination and can be minimised by employing an expert to make it and by insisting as rigorously as possible on the maintenance of basal conditions. The theory of the method is rational, and although it has not escaped criticism, notably by E. P. Poulton,[2] it is unlikely to be modified to an extent which would interfere with the usual interpretation of the results obtained in practice. The formulæ, on the other hand, are quite empirical and lack any theoretical background. Moreover, three measurements have to be made—pulse-rate, and systolic and diastolic blood pressure—and each of these is subject to error. It is clear that the procedure as well as the theory of using such formulæ has very little to recommend it, and it is perhaps unfortunate that it is so easy to carry out. Dr. Frank, like most experienced clinicians, emphasises the importance of giving full value to clinical observations as well as to the basal metabolic rate in estimating the severity of thyroid disease.

[1] Med. Jour. Austral., Sept. 30th, 1935, p. 397.
[2] See THE LANCET, 1934, i., 197.

INTERNATIONAL LEAGUE AGAINST EPILEPSY

DURING the International Neurological Congress held in London last summer a number of those particularly interested in epilepsy met at the Lingfield epileptic colony: 32 doctors representing 14 countries. After discussion it was unanimously decided to revive the International League against Epilepsy with a view of improving the social condition and institutional care of sufferers from epilepsy. It was agreed to issue a publication, annually or oftener, acquainting readers with facilities and with remedial efforts carried on in various countries. Plans were also laid for the league to meet during the next neurological congress in Copenhagen. At a later meeting, Prof. A. Ley of Brussels being in the chair, the following officers were elected: president, William G. Lennox, Boston, U.S.A.; treasurer, Tylor Fox, Lingfield, Surrey; secretaries, H. I. Schou, Dianalund, Denmark, and L. J. J. Muskens, Amsterdam. All who are interested in improving the condition of epileptics are invited to join the league. The membership fee, which includes subscription to the periodical, is the equivalent of 5*s*. a year, or 15*s*. for the four-year period.

RESPIRATORY DISEASE IN NEW-BORN INFANTS

ALTHOUGH pneumonia and atelectasis are generally recognised as important causes of death in the newly born, they have mostly been investigated from the pathological rather than the clinical standpoint. It is useful therefore to have Dr. W. S. Craig's account [1] of his observations in the Royal Maternity Hospital, Edinburgh, where he has made a study of all those infants showing disturbance of general health, and has correlated the clinical and pathological findings in 146 cases coming to autopsy. Radiography was not employed, so that the conditions correspond to those of ordinary practice. In 60 cases no signs of pulmonary disease were found on physical examination; at autopsy, the lungs appeared normal in 52 of these, while 8 showed extensive atelectasis. Consolidation was diagnosed clinically in 50; of these, 28 showed pneumonia, 8 pneumonia with hæmorrhage, 12 hæmorrhage without inflammatory changes, and 2 pleurisy without pneumonia. Atelectasis was diagnosed in 24, and was found in uncomplicated form in 20 of them, in 1 where consolidation had been suspected, and in the 8 cases already mentioned, in which no physical signs had been found. Uncomplicated bronchitis was present in only 4. Analysing the clinical findings, Craig first groups together those cases in which pneumonia or hæmorrhage, or both, produced consolidation. In these he found that the most common sign was cyanosis, which was not so deep as that due to subdural hæmorrhage and responded more readily to oxygen administration. Feebleness at birth, or shortly afterwards, due to prematurity or difficult delivery was noted in the majority. Cough was rare, and the alæ nasi were only seen in action shortly

[1] Edin. Med. Jour., November, 1935, p. 599

before death. The temperature chart was not typical, the temperature being irregularly raised or subnormal. Respiration was rapid, at first deep and subsequently shallow, and sometimes there was retraction of the intercostal or upper abdominal muscles during inspiration. Percussion of the chest was seldom of any help in diagnosing consolidation and the breath sounds were not typically bronchial. Crepitations, however, were constantly present, and were sharp and crackling, localised at the bases or in the axillæ and heard only at the end of inspiration. The physical signs in the cases where bronchitis was later found at autopsy were similar to those noted in cases of consolidation, except that cyanosis was always present and cough commoner; rhonchi and coarse bubbling râles were heard on auscultation. There were 8 recoveries among cases in which bronchitis was diagnosed. Atelectasis was characterised clinically by general limpness, a tendency for the temperature to be subnormal, a variable tinge of cyanosis uninfluenced by oxygen administration, and rapidity but no embarrassment of respiration. The physical signs were less definite than in other conditions described, the breath sounds being distant and often jerky, with no accompaniments. Craig emphasises the tendency for respiratory disease to occur in premature and asphyxiated infants, and its frequent association with intracranial hæmorrhage. The speed with which pneumonia proves fatal in the newly born is shown by his figures: of the 56 cases with consolidation, 51 died within three days and 2 within six days of the condition being recognised.

HÆMOLYTIC ANÆMIAS

"HÆMOLYTIC anæmia appears in many guises; between acholuric jaundice and the acute type described by Lederer we may recognise an ascending series of anæmias." These are the opening words of an instructive paper by Dr. J. L. Lovibond which we publish this week. How far, it may be asked, is his conception of hæmolytic anæmias valuable in practice? Acholuric jaundice is a clearly defined clinical and pathological entity. It is a hereditary condition characterised by increased spherocytosis, reticulocytosis, and fragility of the red cells associated with splenomegaly and a positive indirect van den Bergh reaction. These abnormalities may give rise to no symptoms, being recognised only when a careful examination is made, or they may result in either a chronic or acute form of anæmia. The acute hæmolytic anæmia of Lederer, on the other hand, presents a very ill-defined clinical and pathological picture. Before casting aside the diagnosis of a definite disease such as acholuric jaundice for an indefinite condition like "acute hæmolytic anæmia," it is essential that in any particular case red cell fragility determinations should be made by an accurate quantitative technique both upon the patient's blood and upon that of his relations though they claim to have excellent health. A survey of recently reported cases suggests that if such investigations are carried out acholuric jaundice is the final diagnosis (Scott,[1] Murray-Lyon[2]). Four cases described by Joules and Masterman[3] cannot be accepted as proved not to have acholuric jaundice; other members of the family were not examined and in at least one patient fragility was increased. Since Doan, Curtis, and Wiseman[4] have brought forward conclusive evidence that splenectomy is indicated even in acute cases of acholuric jaundice, the necessity of making an accurate diagnosis in hæmolytic anæmias is not only of academic but also of immediate practical importance.

[1] Scott, A. M.: THE LANCET, Oct. 19th, 1935, p. 872.
[2] Murray-Lyon, R. M.: Brit. Med. Jour., 1935, i., 50.
[3] Joules, H., and Masterman, L. M.: Ibid., 1935, ii., 150.
[4] Doan, C. A., Curtis, G. M., and Wiseman, B. K.: Jour. Amer. Med. Assoc., Nov. 16th, 1935, p. 1567.

A FOOD POLICY

THE report drawn up by the Expert Commission on Nutrition, which met in London under the chairmanship of Prof. Edward Mellanby last month, has now been issued, and we are able to reproduce its essential features on a later page. The report is itself a landmark, but it is only the first stage of the Commission's work. Since the general principles laid down in it are to be applied in different countries and must therefore be adapted to varying conditions of population, customs, and social life, the report is now to be communicated for study to representative scientific institutions in those countries. They in turn will collect advice from technical experts—clinicians, pædiatricians, school medical officers, and the like—and this advice will be analysed and summarised by the Commission and will then be placed at the disposal of a special committee appointed by the League of Nations Council. In this country the advisory body is the Medical Research Council, in the U.S.A. the National Research Council, and in France the Academy of Medicine. In the meanwhile all who are interested in the initiation of a comprehensive national food policy will study the report and, if they are wise, supplement this study by reading the remarkable survey issued[1] in the summer by Dr. E. Burnet and Dr. W. R. Aykroyd, two officers of the League's Health Organisation.

WE regret to announce the death last Monday of Mr. Frank Chetwode Crawley, formerly President of the Royal College of Surgeons in Ireland.

WHO'S WHO for 1936 contains some 40,000 biographies of men and women of the time arranged in convenient form and, for the most part at all events, certified by their eponyms. This is the 88th year of issue of a book of reference which becomes every year more indispensable. Those who would save themselves trouble and anxiety will also procure the two companion volumes, "Who was Who," 1897–1915 and 1916–1928. Year by year names drop out of "Who's Who" on account of death; when details of these biographies are afterwards required much search may be needed unless the actual year of death is known. The prices of the volumes are I., 60*s*., and II. and III., 21*s*. each, from Messrs. A. and C. Black Ltd.

Mr. FRED BUTTERFIELD, who died in London on Dec. 14th at the age of 67 years, had been for more than forty years secretary of the Incorporated Dental Society. When the Dental Board of the United Kingdom was set up in 1921 Mr. Butterfield was appointed by the Privy Council to represent the practising dentists registered under the 1921 Act without diploma, and three years later he was elected to the Board by the free vote of these dentists. On the Dental Board he did all he could to further the interests of the dental practitioner and he served on four of its committees, including the discipline committee and the education committee. His colleague, Mr. W. L. Edwards, representing dental practitioners, died suddenly in April of this year.

[1] Quart. Bull., Health Organ., League of Nations, June, 1935.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXXI.—PROGNOSIS IN MALIGNANT GROWTHS OF THE TESTICLE

VARIOUS classifications and descriptions of malignant growths of the testicle have at times been given and the subject has led to a good deal of controversy. For clinical purposes however, it is sufficient to divide them into two big classes: (1) seminomas or spermatocytomas arising from differentiated germinal epithelium, and (2) embryomas or teratomas arising from undifferentiated germ cells. No further subdivision of the seminomas is necessary, but embryomas or teratomas can be again separated according to their gross or microscopic characteristics, into dermoids, mixed tumours, chorionic carcinomas, and the various types of carcinoma and sarcoma which may be developed within a pre-existing teratoma. From the clinical point of view it may be said that the chief points which distinguish the seminoma from the teratomatous tumours are that the former develop at a later period of life and do not so readily form metastases. The prognosis is therefore better in the case of a seminoma than in that of a teratoma.

Although the outlook is slightly better for a patient who has developed a seminoma than for one who has a teratoma, it must be realised that all malignant growths of the testicle have a high degree of malignancy. The prognosis will therefore depend on the date at which the trouble is discovered and the completeness of the measures taken for its eradication. It is an unfortunate fact that because malignant growths of the testicle are comparatively rare (Russell Howard found 65 cases in 110,000 male cases admitted to the London Hospital) a new growth is seldom suspected before the risk of dissemination has occurred. For this reason L. Chevassu, who has had a unique experience in the treatment of malignant testicle, urges that the organ should be explored under an anæsthetic whenever a hard area has been detected in a testis that otherwise appears to be normal. The earliest sign that may be discovered at such an exploration is an unusual vascularisation of the tunica albuginea in the region of the induration, and this alone should be sufficient in the absence of any explanation to entail immediate orchidectomy.

Experience has definitely proved that simple orchidectomy fails as a means of cure. Chevassu collected statistics from 100 cases in which removal of the testicle alone had been performed and found 19 cures and 81 deaths. Of the 19 cures, 13 were alive and well from 4–7 years and 6 from 7–10 years after operation. Of the 81 who died 47 per cent. were dead within a year of operation. Simple orchidectomy is even more irrational than simple removal of the breast in mammary carcinoma, since the lymphatic spread is more rapid in the case of malignant disease of the testicle than in that of malignant disease of the breast. As a supplementary measure to orchidectomy two means of dealing with secondary deposits are possible: (1) removal of the testicle together with the whole of the lymphatic field as far up as the renal veins, and (2) orchidectomy followed by deep X ray therapy.

ORCHIDECTOMY WITH SURGICAL EXTIRPATION OF THE LYMPHATIC FIELD

The operation is a severe one and carries with it a definite operative mortality that is probably in the region of 10 per cent. Frank Hinman (1935), in reporting on 9 cases in which he carried out removal of the testicle, together with its lymphatic field, states that amongst the 8 who survived operation 2 died of metastases at 9 and 18 months respectively, and another at 4½ years. H. H. Young (1926) states that in another 8 cases, 4 survived, one being alive 9 years later, one 4½ years, and 2 one year after operation. Of the 4 who did not survive even for so long a period as a year, 3 died with regional metastases.

ORCHIDECTOMY AND DEEP X RAY THERAPY

Deep X ray therapy may be begun a week or ten days after the operation or the testicle may be irradiated before its removal. According to most authorities the latter plan is preferable, since it reduces the chances of malignant cells being liberated at the time of operation. As, however, in many cases the diagnosis can only be confirmed by exploration, X ray therapy is more commonly carried out as a secondary procedure. A. L. Dean, reporting on teratoid tumours of the testis treated by X rays of high voltage, states that out of 7 patients with operable tumours 5 remained free from all signs of disease, whilst of the 49 patients who were first seen with inoperable metastases, only 5 were free from signs of disease after treatment. In his opinion preoperative irradiation of the primary tumour is highly desirable, his results showing a much lower mortality in patients so treated. Although the number of cases treated by orchidectomy and deep X ray therapy in my practice has been small, I am able to report patients living free from recurrence at the end of 8, 7, 6, 3, and 2 years respectively. In one of these there already existed a large mass in the left hypochondrium when X ray treatment was started. This mass rapidly disappeared a few weeks after Dr. N. S. Finzi had instituted treatment, and the patient remains alive and well six years later. Dr. Finzi has reported to me that he treated a case of malignant testicle with a secondary mass in front of the rectum 25 years ago, and that he believes this patient to be alive at the present time. But in spite of these successes with secondary deposits, it is an undoubted fact that the prognosis is always better when deep X ray therapy is started before secondary lesions are apparent. The prognosis of later recurrences occurring subsequent to the deep X ray therapy is undoubtedly bad, such recurrences proving to be more radio-resistant than those that may previously have been dealt with.

Although surgeons have not yet reached unanimity on the subject, the majority are of the opinion that the results of deep X ray therapy are better than those obtained from surgical extirpation of the lymphatic field, and H. Cairns has even gone so far as to state that after an analysis of 43 cases in which simple orchidectomy was performed and of 17 who were subjected to the radical operation, it seems to him questionable whether the latter offered enough to justify the risk it entailed.

SUMMARY.—The prognosis of malignant disease of the testicle may therefore be said to depend on the following factors: (1) histological characteristics of the growth; (2) date at which it is discovered; (3) the presence or absence of secondary deposits; (4) the intensity and thoroughness of the X ray treatment.

KENNETH M. WALKER, F.R.C.S.,
Surgeon to the Genito-urinary Department, Royal Northern Hospital; Surgeon to St. Paul's Hospital.

SPECIAL ARTICLES

GENERAL MEDICAL COUNCIL

WINTER SESSION, NOV. 26TH–DEC. 3RD

SECOND REPORT FROM THE CURRICULUM COMMITTEE

THE Curriculum Committee, G.M.C., was appointed in June, 1934, to consider the information and proposals received in respect of the revision of the curriculum. This committee, of which Dr. H. L. Tidy is the chairman, reported to the Council on May 31st, 1935, and it was resolved that the documents should be circulated to the licensing bodies and the deans of the medical schools for their observations, when the whole matter would be further considered at the next November session. A full abstract of the recommendations forming the first or interim report was published in our columns, the resolutions being given verbatim (see THE LANCET, June 15th, 1935, p. 1403).

A second interim report was received by the G.M.C. at its recent winter session, and in this document the provisional views of the Curriculum Committee on the important points are set out, with the alterations in accordance with suggestions received. It will be convenient to readers to have before them the text of the later report, although so much of it has been substantially published in our columns recently. The alterations are printed in italics. It is recommended that every student should be registered at the commencement of his studies in the Medical Students' Register.

I.—Pre-Registration Examinations

Before registration as a student or commencement of the medical curriculum proper every person shall be required to pass, in addition to an approved preliminary examination in general education, an examination or examinations conducted or recognised by one of the licensing bodies, and comprising the following subjects:—

1. One or two subjects of general education at an approved standard.

2. Chemistry (theoretical and practical), the elementary principles of the chemical combination of elements, including carbon.

3. Physics (theoretical and practical), the elementary mechanics of solids and fluids, the elements of heat, light, sound, electricity, and magnetism.

4. *Elements of General Biology: A course of instruction, including practical work, in the fundamental facts of vegetable and animal structure, life-history, and function; and an introduction to the study of embryology.*

The examination in the subject of biology may be taken after registration as a student in the period of study of the professional scientific subjects.

II.—Medical Curriculum

With regard to the course of study and examinations which persons desirous of qualifying for the medical profession shall go through in order that they may become possessed of the knowledge and skill requisite for the efficient practice of medicine, surgery, and midwifery, the Council recommend as follows, viz.:—

The period of professional study, between the date of registration as a medical student and the date of the final examination for any diploma which entitles its holder to be registered under the Medical Acts, should be a period of certified study during not less than five academic years.

The first two years should be devoted to the study of professional scientific subjects with an introduction to clinical subjects. The last three years should be devoted to the study of the clinical subjects together with the clinical application of the professional scientific subjects.

Throughout the whole period of study, the attention of the student should be directed by his teachers (*a*) *to the importance of the measures by which normal health may be assessed and maintained, and* (*b*) *to the principles and practice of the prevention of disease.*

In every course of professional study, and in the examinations, the following subjects should be included:—

A.—PERIOD OF STUDY OF THE PROFESSIONAL SCIENTIFIC SUBJECTS (FIRST AND SECOND YEARS)

1. Human Anatomy and Human Physiology: These courses should include:—

(1) Dissection of the entire cadaver.
(2) Anatomy of the living body.
(3) Elements of human embryology.
(4) *Histology, the elements of cytology.*
(5) *The elements of genetics.*

NOTE.—This subject may be taken with Biology.

(6) The principles of general physiology, the chemistry and physics of bodily functions studied as far as possible in the human subject.

(7) *Instruction in normal reactions of the body to injury and infection as an introduction to general pathology and bacteriology.*

(8) Elements of normal psychology.

Instruction, illustrative of that given in anatomy and physiology and introductory to later studies, should be given in the second year in the following subjects, the amount of time to be allotted to them not to exceed one-third of the total time available in that year:—

2. Elements of the Methods of Clinical Examination, including physical signs, the use of the stethoscope, ophthalmoscope, &c., and the examination of body fluids (with demonstrations on living subjects, normal and abnormal).

3. An Introduction to Pharmacology.

NOTE.—It is recommended that students should not pass to the period of clinical studies until they have satisfied the examiners in the subjects of the first and second years.

B.—PERIOD OF CLINICAL STUDIES

This period occupies the third, fourth, and fifth years of the medical curriculum proper. These should be calendar years, during which clinical instruction should be continuous.

A minimum period of three years should in every case be given to clinical study in an approved hospital after the completion by the student of the professional examinations held at the close of the second year of the medical curriculum proper.

4. Medicine, including:—

(1) Systematic instruction in the principles and practice of medicine.

(2) A medical clinical clerkship in the hospital wards for a period of six months.

(3) A continuous period of not less than one month in residence in hospital or conveniently nearby, attached to medical wards.

(4) A clinical clerkship for a period of not less than one month in a children's ward or hospital.

(5) Regular attendance in a medical out-patient or equivalent department for a period of three months.

(6) *Regular instruction and demonstrations in applied anatomy and physiology during the period of clinical studies, to be carried out as arranged by the teachers of anatomy and physiology and of the clinical subjects.*

(7) Instruction in methods of treatment, including: (*a*) dietetics; (*b*) therapeutics and prescribing; (*c*) physiotherapy; (*d*) principles of nursing.

(8) Instruction in the following branches of medicine: (*a*) disease in infancy and childhood, and child welfare; (*b*) acute infectious diseases; (*c*) tuberculosis; (*d*) *psychology and mental disease and*

deficiency; (*e*) diseases of the skin; (*f*) radiology in its application to medicine; (*g*) theory and practice of vaccination.

NOTE.—*Instruction in these branches of medicine should be directed to the attainment of sufficient knowledge to ensure familiarity with common conditions, their recognition and treatment.*

5. Surgery, including:—

(1) Systematic instruction in the principles and practice of surgery.

(2) A surgical dressership in the hospital wards for a period of six months.

NOTE.—During his period of surgical dressership a student should spend the greater part of his time at the bedside and in the out-patient department; and he should not be required to attend in the operating theatre unnecessarily.

(3) A continuous period of not less than one month in residence in hospital or conveniently nearby, attached to surgical wards.

(4) Regular attendance in a surgical out-patient or equivalent department for a period of three months.

(5) Practical instruction in surgical methods, including physiotherapy.

(6) Practical instruction in minor operative surgery on the living.

(7) Instruction in the administration of anæsthetics, the candidate being certified to have administered anæsthetics on at least ten occasions.

(8) A course of instruction in operative surgery.

(9) *Regular instruction and demonstrations in applied anatomy and physiology during the period of clinical studies, to be carried out as arranged by the teachers of anatomy and physiology and of the clinical subjects.*

(10) Instruction in the following branches of surgery: (*a*) disease in infancy and childhood; (*b*) diseases of the eye and principles of refraction; (*c*) diseases of the ear, nose and throat; (*d*) radiology in its application to surgery; (*e*) venereal diseases; (*f*) orthopædics; (*g*) dental diseases.

NOTE.—*Instruction in these branches of surgery should be directed to the attainment of sufficient knowledge to ensure familiarity with common conditions, their recognition and treatment.*

6. Midwifery, Infant Hygiene and Diseases of Women, including:—

(1) Systematic instruction in the principles and practice of midwifery and gynæcology, including the applied anatomy and physiology of pregnancy and labour.

(2) Lectures and demonstrations in clinical midwifery, infant hygiene and gynæcology, and attendance on the practice of a maternity hospital or of the maternity ward of a general hospital, and on in-patient and out-patient gynæcological practice, for a period of six months, this period to be subsequent to the medical clinical clerkship (paragraph 4 (2)) and the surgical dressership (paragraph 5 (2)).

During this period the hours of clinical instruction should be so allotted that at least two-thirds are given to midwifery, including antenatal care and the hygiene of infants.

(3) Of this period of clinical instruction not less than two months should be spent as a resident pupil either in a maternity hospital, or in a hostel attached to a maternity hospital or the maternity wards of a general hospital, and these two months should be devoted exclusively to instruction in midwifery and in the hygiene of infants. *The student should during these two months attend at least twenty cases of labour under proper supervision.*

(4) Throughout the six months the student should receive practical instruction in the wards and out-patient department of the maternity hospital in the principles of: (*a*) antenatal and postnatal care; (*b*) the management of the puerperium; (*c*) the care of the new-born infant.

A certificate of having attended twenty cases of labour should be signed by a responsible medical officer on the staff of the hospital, and should state:—

(i) That the student has personally attended each case during the course of labour, making the necessary abdominal and other examinations under the supervision of the certifying officer, who should describe his official position;

(ii) That the first five at least of the twenty cases were delivered by the student in the lying-in hospital or ward;

(iii) That satisfactory written histories of the cases attended, including when possible antenatal and postnatal observations, were presented by the student and initialed by the supervising officer.

7. *Pathology and Bacteriology: Courses of instruction throughout the period of clinical studies in* (1) *general and special pathology* (*functional and structural*) *and morbid anatomy*; (2) *clinical and chemical pathology*; (3) *general and clinical bacteriology*; *and* (4) *immunology and immunisation.*

Each students should be required to have received practical instruction in the conduct of autopsies, and to have acted as a post-mortem clerk in at least ten cases.

8. A Course in Pharmacology and Materia Medica, including practical pharmacy.

9. Hygiene and Public Health.—Instruction in these subjects should be given during the later stages of the period of clinical studies.

10. Forensic Medicine.—Instruction in this subject and its application to practice should be given during the later stages of the period of clinical studies.

11. Legal and Ethical Obligations of Registered Medical Practitioners.—Instruction should be given during the later stages of the period of clinical studies, by some person having practical knowledge of the subject, on the statutory obligations of registered medical practitioners under the National Health Insurance Acts and other Acts of Parliament, and on the principles of medical ethics. Attention should be called to all notices on these subjects issued by the General Medical Council.

Penal Cases

(*Concluded from p. 1366*)

A CHARGE OF ADULTERY

The Case of David Edward Stanford Park, registered as of Erinville, Higher Polsham-road, Paignton, M.B., Ch.B. 1903, U. Edin., who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner you abused your position by committing adultery with a Miss Monica Mary Magdalen Blount, a patient at Bay Mount Home, Paignton, Devon, of which you were the manager and medical officer, of which adultery you were found guilty by the decree of the Probate, Divorce, and Admiralty Division (Divorce) of the High Court of Justice, dated Oct. 30th, 1934, and made absolute on May 7th, 1935, in the case of Park, Edna Lee *v.* Park, David Edward Stanford, in which you were the respondent. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The complainant was Mrs. Edna Lee Park.

Respondent was represented by Mr. O. Hempson, on behalf of the Medical Defence Union, who put in a certificate stating Dr. Park's physical unfitness to attend and expressing fear of the harm that further postponement might do to his health.

Mr. Winterbottom laid the facts before the Council and called Mrs. Park. She testified to her statutory declaration, setting out the facts of the divorce and of the management of the Bay Mount Home for inebriates. As secretary to the company she had dealt with the admission of Miss Blount as a patient. Neither she nor her husband had heard of Miss Blount before. The patient had improved, but had written later that she had relapsed with "nerves." Respondent had gone to see her and thereafter had changed in his manner and ceased to give complainant her usual allowance. Later Miss Blount had returned to the home with jaundice and had been treated professionally by Dr. Park. Suspicion had then arisen, and later—also as secretary to the company—

complainant had opened a letter confirming her suspicions. Respondent had confessed and complainant had forthwith left. Miss Blount had later gone to the home, ostensibly as secretary, and had died at the home in January, 1934, leaving all her property to Dr. Park.

Complainant said she had not been asked to accompany her husband on his holiday; she had never refused to go. It had been agreed long before that one of them should look after the business. She had given up her social life to be with him and look after the home and the patients. She had been too shocked and agitated to think of spite, and had shown the letter to the sister and to Dr. Park's mother and their daughter. No one else had seen it. He had always been delicate and asthmatic. He had gone about the town publicly with Miss Blount.

Cross-examined by Mr. Hempson, she said she had left her husband in August, 1932, and the petition had been served in 1934, very shortly before Miss Blount's death. She did not know that Miss Blount had had to be propped up in bed and her hand guided to sign the receipt for service. She knew Miss Blount was ill, but had asked her solicitor too late not to serve the petition. The delay in commencing the proceedings had been due to attempts to get maintenance. She had not accepted his offers. The order for alimony was considerably less than he had offered, which had been £14 a month as long as Bay Mount was running. The order had been for £1 a month. It had, she admitted, been one fight for money from start to finish. If threat of proceedings before the Council had been held over his head time and time again to enforce maintenance, she did not know of it.

The Legal Assessor pointed out that the only issue before the Council was that of professional relationship.

Continuing, she agreed that her husband's professional work had been confined to the home. It was not true to say that her husband had had no part in the second visit of Miss Blount; or to say that Miss Blount had asked to come as a guest and not as a patient. Miss Blount had not occupied the same room on the second occasion. Witness did not know what she paid then. She remembered seeing her husband make out the bill. Miss Blount had paid 7½ guineas a week the first time. She had been treated for jaundice on the second visit. No other doctor had attended her. She had arrived with a temperature and had gone to bed and been dieted and treated. Witness knew nothing about Miss Blount's arrangements or reasons for coming. She did not suggest adultery during this visit. She had heard that Miss Blount was ill for nearly twelve months, but her husband had been no worse than he had always been.

In reply to the Legal Assessor, witness said that in Miss Blount's letter to her nothing had been said about coming as a patient on the second visit. It had not usually been her duty as secretary to the company to make out the bills; this had been done by her or her husband. It was a limited company and the accounts had been audited. Receipts had been issued by her and her husband and he had fixed the charges without consulting her. The charges had been inclusive of medical attendance.

Mr. Winterbottom read out Miss Blount's will and probate thereof.

Dr. A. R. Pocock said that Miss Blount was his patient for a long time and he had advised her to go to Bay Mount the first time. She had returned practically well. She had later told witness that Dr. Park had asked her to go again as a guest although she was quite well. He had said "As a patient?" and she had replied "Certainly not." She had had no jaundice to his knowledge, and no other reason for medical treatment.

In reply to Mr. Winterbottom, he said he had seen Miss Blount within a week or two of her departure for Paignton in 1932. He had clearly understood that she would not be paying a fee.

In reply to the Legal Assessor, he said he had often prescribed for her, but not immediately before this visit. She had nearly always had nux vomica and an alkaline mixture.

In reply to members, he said he had written to Dr. Park on the first occasion only but certainly not the second time. He had sent several cases to the home, which took convalescents as well as acute cases.

Mr. Hempson read Dr. Park's statutory declaration and a letter amending it. He admitted dispensing medicine prescribed by her usual medical attendant for Miss Blount during the second visit, when she was convalescent after jaundice. He denied any other medical attendance. The association had then been perfectly proper. Having to pass through London he had arranged to meet her at Paddington, and on the spur of the moment they had spent three days together. The association had then been ended, but Miss Blount had written one letter to him, which had been opened by his wife. The complainant had triumphantly informed the whole neighbourhood. He maintained that he had not abused the professional relationship, which had ceased in May, 1932, when she left Bay Mount and he had never anticipated seeing her again. His wife had threatened to leave him in January, 1932, and had made his life a misery long before he ever met Miss Blount.

Mr. Hempson then addressed the Council, emphasising that Miss Blount had had her own medical attendant all the time and had only been referred to Dr. Park for special treatment for one thing. The case did not present the fundamental factor of privileged admission to the patient's house at any hour or in any circumstances. There had been complete severance of the relationship and no foundation for the subsequent association, which dated from his wife's letter suggesting he should go and see her and take her out. Respondent was broken in health, spirit, and pocket, and his only hope of eking out an existence was to take a few patients well enough to come to him.

Mr. Winterbottom addressed the Council, and after deliberation in camera the President announced that the facts had been found proved and the Registrar had been directed to erase Dr. Park's name from the Register.

ALLEGED CANVASSING

The Case of John Alexander McKinnon, registered as of Claremont, Upper High-street, Thame, Oxon., L., L.M. 1916, R.C.P. Irel.; L., L.M. 1916, R.C.S. Irel., who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner you canvassed in or about the month of February, 1935, for the purpose of obtaining patients in respect of your practice as a registered medical practitioner carried on by you at Thame, Oxford: (1) By circulating, or acquiescing in the circulation of, a leaflet headed "To the Residents of Tetsworth and District," convening a meeting to be held on Feb. 18th, 1935, at the British Legion Club, Tetsworth, to enrol members of a doctor's club, in which it was stated that "The Doctor" (yourself) "with whom arrangements

have been completed, will attend this meeting"; (2) by acquiescing in the calling of and/or agreeing to attend a meeting of the local residents with a view to the formation amongst them of a medical club of which you were to be the sole medical officer; (3) by employing, or sanctioning the employment of, an agent or canvasser who attended the said meeting and invited the persons present and others to become patients of yours by joining the doctor's club. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The complainants were the Medical Defence Union, for whom Mr. O. Hempson appeared. Dr. McKinnon was represented by Mr. T. Carthew, counsel, instructed by Messrs. Le Brasseur and Oakley, solicitors to the London and Counties Medical Protection Society. Mr. Hempson said that respondent had set up in Thame without purchasing any practice; such a man had to be particularly careful what he did, as it was to be presumed that all residents already had their own doctor. The formation of a club was unobjectionable, but it was objectionable in the extreme to canvass a club of which one doctor only was medical officer. Mr. Hempson read a letter from respondent's solicitors which he characterised as an admission of the charges.

Mr. J. C. Everett, solicitor, testified to his statutory declaration in which he stated that he had seen a handbill, and in consequence had attended a meeting called by Mr. Crump, secretary to the local branch of the British Legion. Respondent had opened the door of the hall. Mr. Crump had spoken to him and left the hall, shortly returning to address the meeting. He said "they" had spoken to the doctor (respondent) about it and fixed subscriptions. The doctor had had nothing to do with calling the meeting, but had intended to be present; he had, however, been called to an urgent case and hoped to return.

In answer to Mr. Carthew, witness agreed that he had gone there on the instructions of a local doctor to see what went on. The substance of his declaration had been written down by him immediately after the meeting. He did not remember if Mr. Crump had said the meeting was to discuss the possibility of forming a club, and that subscriptions to the club would not affect payments to the Radcliffe Infirmary.

Mr. T. W. Ludgate, clerk to Mr. Everett, testified to his statutory declaration and said that respondent had attended the meeting in question. Cross-examined by Mr. Carthew, he thought Mr. Crump had said "with a view to forming" the club, and did not think he had said people were not being pressed to leave their own doctors.

Mr. W. F. Small, gardener in the employ of a local doctor, had attended the meeting on his master's instructions and in consequence of a handbill. He gave a similar account of what had been said. Cross-examined, he said he had written the declaration in the doctor's surgery, with his help. He could not explain a difference between his own rough notes made at the time and his statutory declaration; the former said "proposed to start" a club, and the latter said "call to enrol members." He supposed that his employer had suggested the words.

Mr. Hempson read a statutory declaration from the chairman of the local branch of the British Legion disclaiming the meeting and saying the Legion knew nothing of the club.

Dr. McKinnon, examined by Mr. Carthew, said he practised at Thame and had just taken a partner. He was a member of the British Legion. Mr. Crump was secretary of the Tetsworth branch and a patient of his, and had approached him, asking if he could do something for the poorer members of the Legion. There had been a club in the district before. He had not agreed to be the doctor, and it was left to Mr. Crump to let him know details of what was wanted. He had never run a club. He had agreed to go to the meeting to discuss possibilities. He had first seen the leaflet when solicitors sent it him many months later; he had had no knowledge what steps Crump was taking and had no idea there was a handbill. On the day of the meeting he had gone to the Legion Hall about 3.30 P.M. and Crump had come out to him and had a conversation. Respondent had then returned to Thame. Crump had had no authority to say he had agreed to accept club members as his patients; he had never promised to do that. Arrangements had never even been discussed. He had never seen the letter sent by his solicitors to the Registrar.

Mr. Hempson cross-examined respondent, who said he disagreed with the letter of his solicitors. He had said he was prepared to act as medical adviser to the club if in the event it proved agreeable to him. When he had called Crump out he had asked if it was a public meeting, and on hearing that it was had said he could have nothing to do with it as the procedure was quite wrong, and he had made it perfectly clear that he would have no more to do with it. It was not true that he had been prepared to go on until he heard of the circulars.

Mr. Carthew re-examined, and then called Mr. Crump, secretary to the Tetsworth branch of the British Legion. He testified that up to January, 1934, there had been a Legion club but then its doctor had notified members that he was not going on. Witness had been very anxious to start another club because so many poor people could not afford a doctor. He had spoken about it to Dr. McKinnon during January, and the doctor had replied that he was willing, but nothing definite had been settled. He himself had composed and ordered and paid for the handbills. The doctor had had nothing whatever to do with them, and did not know they were being ordered. He had told Dr. McKinnon of the time and place of the meeting. He had put "with whom arrangements had been completed" on the circular because he thought everything would be all right. He took full responsibility for the handbill, which he sent out to all members of the Legion and the club run by it. Fifty had been printed, but a few had been left over. The work was done through the benevolent committee which was nothing to do with the chairman of the local branch. He had explained at the meeting that the club subscription would not interfere with existing hospital payment schemes and had tried to explain that the club was only for those who were too poor to afford a doctor.

Cross-examined by Mr. Hempson, witness agreed he had been disappointed that Dr. McKinnon could not attend the meeting. He had not discussed fees with the doctor.

Mr. Carthew, addressing the Council, argued that Mr. Crump had been solely responsible for the circular. Respondent had agreed to attend a meeting but had thought it was a committee meeting of the Legion. When he arrived and saw the nature of the meeting he had made an excuse and gone away.

Mr. Hempson emphasised a direct conflict of evidence between respondent and Mr. Crump. He did not accept Dr. McKinnon "as the fool he appeared in the box" or as an honest witness. The meeting, in his opinion, had been called with the knowledge and approval of respondent.

After deliberation in camera the President announced that the facts in the preamble and in para. (2) and (3) of the charge had been found proved, but not the fact in para. (1). The methods were contrary to the public interest and profession of medicine, but judgment had been postponed until November, 1936, with the usual provisos.

Restorations after Non-Penal Removal

At the meeting of the executive committee preceding the Council meeting the names of the following persons had, on fulfilment in each case of the prescribed conditions, been restored to the Register, from which they had been erased under Section 14 of the Medical Act, 1858:—

Bushe, Joseph B. (S).	McCullough, William W. (I).
Campbell, James McN. (S).	McElroy, William (S).
Clarke, John J.	Melrose, Thomas R. G. (S).
Cresswell, Norman (I).	Pasco, Bernard C. W.
Dyet, (Mrs.) Mary E. (S).	Phillips, Lionel L.
Evison, Frank A.	Rankin, Reginald J.
Jones, William E.	Sleigh, George B. (S).
Kenealy, Arabella M.	Smith, Alistair H. (S).
Lloyd, John T.	Thistlethwaite, Eleanor C. (S).

The letter (S) or (I) after a name indicates that the name was sent for restoration by the registrar of the branch council for Scotland or of the branch council for Ireland.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

PREGNANCY WASTAGE

HITHERTO only rough estimates of the number of abortions in the United States have been available and even these have lacked any attempt to distinguish between legal and illegal abortions. A basis for more exact study has been found by Dr. Regine K. Stix of the Milbank Memorial Fund in the records of birth control clinics. In this confidential haven of the overly pregnant accurate histories have been recorded. Of the 991 women whose records were studied two-thirds were Jewish, one-sixth Catholic, and the remainder Protestant. Half of the women were foreign-born. The total number of pregnancies was 3106, of which only 35 were due to premarital intercourse. Seventy per cent. of the pregnancies terminated in live births, 20 per cent. in illegal abortions, and the remaining 10 per cent. in spontaneous abortions, therapeutic abortions, ectopic pregnancies, or stillbirths. A smaller proportion of Catholic pregnancies were aborted than of Jewish pregnancies; not that the Catholic women resorted less frequently to abortion, but they became pregnant more frequently than the Jews. Six per cent. of the Jews and 11 per cent. of the Catholics had experienced three or more illegal abortions. Dr. Stix is careful to point out that since all the histories were compiled in a birth control clinic the women may not be truly representative of their religious groups.

The proportion of pregnancies terminating in live births declined rapidly with length of marriage. Less than one-fifth of first pregnancies were accidental, but of the conceptions occurring in the period 15–29 years after marriage nearly three-fourths happened in spite of contraceptive efforts to prevent them. Nearly 40 per cent. of such "accidental" pregnancies were terminated by illegal abortion.

By comparing corresponding periods of married life at different dates it is shown that during the last 25 years there has been a big increase in the proportion of pregnancies terminated by illegal abortion. The younger generation, it seems, not infrequently resorts to abortion for economic reasons early in marriage and later indulges in "planned pregnancies" when the family's finances permit. Nearly 75 per cent. of illegal abortions were performed by "doctors," 20 per cent. by midwives, and the remainder by the woman herself. The price charged for inducing abortion varied from $2 to $200, the average being $60.

NEW RICH SOURCE OF VITAMIN B

Research at the experiment station of the New Mexico College of Agriculture has discovered an uncommonly rich source of vitamin B in the pinto bean. By the rat-growth method these beans are found to have 298 Sherman units of vitamin B (English B_1) per ounce of food material. This is more than is found in rice polishings, only slightly less than in wheat germ, and more than half the quantity found in dried brewers' yeast. The pinto bean belongs to the botanical species *Phaseolus vulgaris* and was probably introduced into the south-western States by the early Spanish missionaries. It has been a staple diet of the natives of these States since it was popularised by use in the army during the Spanish-American war. Until comparatively recently it was known as the rosillo bean. The name pinto means "spotted" and is no doubt a tribute to the bean's macular complexion. The production of this bean in New Mexico increased from 9700 bags (of 100 lb. each) in 1879 to 974,900 bags in 1929. Properly cooked these beans make a very succulent dish.

STUDY OF HEART DISEASE

Death from "heart disease" is a very unsatisfactory classification, covering as it does many diverse pathological states which happen to affect the same organ. A study by the U.S. Public Health Service of 450 fatal cases of heart disease occurring in Washington hospitals during the year 1932 [1] reveals the following percentage classification:—

	Per cent.		Per cent.
Arterio-sclerotic hypertensive diseases ..	61·4	Congenital malformations	2·0
Rheumatic	13·3	Thyrotoxic	1·3
Syphilitic	12·0	Other conditions ..	0·6
Bacterial endocarditis and pericarditis	4·7	Undetermined	4·7

Special emphasis is laid upon the importance of arterial hypertension in causing death in middle life. Hypertension is more fatal in the negro than in the white race, more fatal especially among coloured females. This prevalence of hypertension among negroes together with the greater syphilis rate in this race results in cardiac death at a lower average age than in the whites. Rheumatic heart disease on the other hand is more common in the white race, especially among females.

[1] Pub. Health Rep., 1935, vol. l., No. 34.

INTERNATIONAL CONFERENCE ON FEVER THERAPY. The first international meeting on fever therapy will be held in New York City next September, when therapeutic, physiological, and pathological phases of fever will be discussed. Baron Henri de Rothschild is the chairman and the secretary is Dr. William Bierman, 471, Park-avenue, New York City, U.S.A., from whom further information may be obtained.

CORRESPONDENCE

THE MIDWIFERY SERVICE IN LONDON

To the Editor of THE LANCET

SIR,—In a recent letter in your columns (Nov. 16th, p. 1145) Dame Janet Campbell called attention to a number of important questions which need solution before any plan for a salaried service of midwives can be launched with good prospects of success. Dame Janet assumed the establishment of the proposed service under local authorities; but in the metropolitan area of London the existence of two public health authorities involves a difficulty as great as any she enumerated. Here one of the first decisions must be whether the London county council or the local borough councils shall inaugurate and control the proposed service.

Since no small proportion of hospital midwifery has passed already within the administration of the L.C.C., it would seem to be an obvious and logical step to extend the scope and powers of this body to include the new domiciliary service; for a large number of examples have already made clear how great are the advantages of a single unit controlling midwifery in a hospital and the homes surrounding it. Since, however, the child welfare service is, and seems likely to remain, the responsibility of local authorities, such arrangement would separate officially and in practice would virtually isolate midwifery and infant care from each other: two branches of work whose individual success must depend on the closeness of their coöperation.

If, on the other hand, it be decided that a salaried service of midwives shall be the responsibility of the local authorities, its value must be largely diminished by hospital and domiciliary midwifery being under separate control. To perpetuate two midwifery services operating in the same area, one serving women to be confined at home, the other those who are going into hospital, both requiring the organisation of antenatal care and experts to pronounce on cases of doubtful safety, one service in emergencies having to come to the assistance of the other—this is surely no advance towards efficiency, simplicity, or economy. It is exactly the opposite.

Further, as the postnatal care of women develops (beyond, that is, the present rather formal conception of a gynæcological examination at one or two fixed dates after delivery), the importance of the present widespread incidence of maternal ill-health will come to be increasingly realised, with all its repercussions on the health of infants and the family. It may thus be predicted with certainty that postnatal supervision must comprise not merely a "pelvic overhaul" but the attempt to control all those factors which concern a woman's general health and influence her ability to succour her child. Further, it must continue to safeguard her so that after an appropriate interval she can repeat the process. What is needed is a service to which she can turn throughout the period of her reproductive life with confidence that her particular needs are known and understood: a service comparable in fact to what she would receive from her general practitioner if she could afford it. Hitherto in the working of the Maternity and Child Welfare Act not much appreciation of this has been shown.

Advance will be rendered as difficult as possible if women confined in hospital are retained indefinitely as its out-patients, while for those confined at home a separate service has to be organised; for unless all domiciliary cases are to be referred to hospital two postnatal—just as two antenatal—services will be needed. Existing confusion will be further increased as the different authorities attempt to decide which shall provide care for the infant while the mother remains under hospital supervision. Solomon himself would be puzzled. There is no limit to the prospect of overlap and waste which must result, nor with the best will in the world can it be supposed that friction and competition can be avoided. The sufferers in such event, as always, will be the very persons it is desired to help—the mothers and their infants.

This apparently simple and eminently sensible proposal to improve the conditions of midwives and the quality of their work is long overdue. It might well mark a nodal point in the histories of both midwifery and public health. Its establishment in London is intertwined with a number of absurd anomalies which frustrate effective advance in public health in many directions. I submit, Sir, that an invaluable opportunity here arises to remove them, and that the Minister of Health, the London county council, and local borough councils should at this juncture combine, and, subordinating departmental claims, bring into being a single service uniting all those activities which can be directed with profit towards increasing the safety of mothers and children. The difficulties are considerable, but they could be overcome. Public opinion is aroused and would surely give support to such an endeavour.

I am, Sir, yours faithfully,

HAROLD WALLER.

Royal College of St. Katharine, Poplar, Dec. 9th.

CYSTICERCOSIS AND EPILEPSY

To the Editor of THE LANCET

SIR,—In reading reports on possible cases of cysticercosis one cannot but be impressed by the widespread miscomprehensions which exist regarding this disease. The biological object of cysticerci while in the tissues of the intermediate host is to remain quiescent; they may be likened to thieves who have entered some premises where they stay hidden so long as concealment is helpful to their purpose. In the same way, cysticerci normally give little or no outward sign of their presence (unless crowded out by their own numbers) while they are alive, but after their death they cause symptoms by post-mortem swelling and by the liberation of toxic products of degeneration. Consequently a period of several years commonly elapses between the invasion of the body and the onset of clinical symptoms, of which the most frequent is epilepsy.

During the life of the host, diagnosis for practical purposes is at present dependent on only two signs, neither of which unfortunately is a necessary part in the development and degeneration of the parasite—namely, the appearance of palpable cysts in the tissues, and their calcification post mortem. As regards the first mentioned there may be no cysticerci outside the brain, and even if present in muscle, &c., as well they may be too deep for detection and excision when post-mortem swelling occurs; or so few in number as to escape notice; or the host may come under examination only at a time when he is free from palpable cysts although some may have been present months or years before, or may appear months or years afterwards, as determined by the longevity of individual parasites. Calcification is found only as a form of post-mortem degeneration,

and as a rule a period of about three years elapses between the death of a cysticercus and the deposition of calcium sufficient for recognition in a skiagram. Some parasites may die off quickly, while others in the same host may remain alive for many years and, speaking generally, a positive skiagram can hardly be expected if the patient's nervous symptoms are of less than four or five years' duration. On the other hand, if the silent stage of the disease has extended (say) to over five years, calcified parasites might be detected somewhere in the body at the time of the onset of the nervous symptoms. It cannot be emphasised too strongly that, as a rule, the cysticerci in the brain do not calcify, and so cannot be seen in a skiagram; radiological examination, therefore, should never be limited to the skull.

For every case of cysticercosis immediately diagnosable, there is a large number which will defy diagnosis for years, or which can be recognised only by autopsy; and even after death the presence of a few cerebral parasites—perhaps only one or two in all—might easily be overlooked "unless the pathologist has cysticercosis in mind, knows what to look for, and leaves no scrap of brain substance more than four millimetres square, unsearched.[1]"

I am, Sir, yours faithfully,

W. P. MACARTHUR.

Royal Army Medical College, London, S.W., Dec. 12th.

ARTERIAL EMBOLISM

To the Editor of THE LANCET

SIR,—I was much interested in reading in your issue of Nov. 30th (p. 1231) of Mr. Girdlestone's experience of a femoral embolus and its spontaneous cure at the time of operative exposure. May I refer to a somewhat similar experience of my own in 1911, the details of which were published later (Clin. Jour., Dec. 10th, 1913, p. 573) together with details of another case too ill to operate on.

A man, aged 60, was operated on for carcinoma of the larynx by the late Mr. F. A. Rose and the entire larynx successfully removed. A fortnight later the patient was suddenly seized with pain and tingling in the left foot which was followed by ascending pallor, loss of sensation and power in the left leg. Six hours later when I examined him no pulse was felt below the bifurcation of the common femoral, and the leg was cold, pallid, and insensitive from the knee downwards. I at once exposed the common femoral artery. Pulsation was found to cease at the bifurcation. After opening the sheath I raised the artery in order to apply a Crile's clamp above and below, when pulsation suddenly returned in the superficial femoral. As I could not satisfy myself of pulsation low down in Hunter's canal, I exposed the artery at this point, and found that the vessel pulsated as far as the middle of the popliteal space. On the following day some warmth returned to the foot, but the tibial arteries were pulseless. Gangrene of the foot eventually became established, and a week later I amputated the leg through the condyles of the femur. The artery was completely blocked at the bifurcation of the popliteal and thrombosis extended down both tibial arteries. The patient made a good recovery.

In the light of subsequent events I should have exposed the artery in the popliteal space, but I thought then that I might make matters worse if the clot again shifted into the tibials and that the collateral circulation round the knee might be adequate. As Mr. Girdlestone states, the happy accident in his case might be an aim on other occasions; Mr. Geoffrey Jeffreson, he reminds us, suggested last year at the B.M.A. meeting at Bournemouth a deliberate attempt to massage the blood-clot into a subsidiary artery. In my 1913 paper I referred to two successful cases of *pétrissage* for femoral embolism without exposure of the arteries by Paul Claisse (Bull. Soc. méd. hôp. de Paris, June 10th, 1910, p. 766) and Pierre Merklen (ibid., Nov. 6th, 1903, p. 1180).

Although many successful cases of embolectomy have been recorded there have been a great many failures, including one of my own (Brit. Med. Jour., 1926, i., 1032), owing to subsequent thrombosis towards which the opening of the artery must be a contributory factor, and I am not sure that *pétrissage* after exposure of the artery has received sufficient prominence. It may not be out of place to quote here what I said in 1913:

> It may well be asked which method offers a better chance of success as regards gangrene—exposure of the artery and an attempt to break up the clot by massage, or incision into the artery and an attempt to re-establish the channel by removal of clot. There are two important factors to consider—viz., (1) condition of the lining of the vessels; (2) length of time that the vessel has been occluded.
>
> (1) If the patient is old and suffering from arteriosclerosis, subsequent thrombosis is likely to occur, even if an embolus is successfully removed, and consequently *pétrissage* should offer more chance of success, even though resulting in the blocking of vessels lower down. In these cases immediate massage of the affected part should first be tried, and if unsuccessful the artery should be exposed and an attempt made to dislodge the embolus by *pétrissage*. In the case of a patient under middle age, with healthy vessels, arteriotomy conducted on careful lines should, I think, be the method of choice. A proximal clot rapidly forms as far up as the nearest branch. This fact must not be forgotten in operative procedures.
>
> (2) The lodgment of an embolus in an artery is rapidly followed by thrombosis, the extent of which will depend on the condition of the heart and arteries and on the size of the vessel. Consequently, the earlier the attempt at embolectomy, the greater the likelihood of success. At the same time massage is less likely to succeed once thrombosis has become established.

I am, Sir, yours faithfully,

London, W., Dec. 12th. C. GORDON-WATSON.

TREATMENT OF HÆMATEMESIS

To the Editor of THE LANCET

SIR,—I also have read Prof. Meulengracht's article with great interest. It seems time that we should depart from the present line of treatment. Figures collected over a period of time and in various clinics would suggest that there was room for improvement, and I welcome Prof. Meulengracht's method as one which at least relieves the patient of a form of treatment which is so definitely lowering, and from the patient's point of view must be in the nature of a mild degree of torture. The stomach in the ordinary way is constantly being supplied with saliva and is also supplied with a defence mechanism which prevents digestion of its mucous membrane. When an ulcer bleeds we take the patient, prevent as far as possible the flow of saliva, and by keeping his stomach empty allow his acid gastric juice to have free play on the raw ulcer area, which is defenceless; the evidence would go to show that at the same time such an empty stomach is in more active movement than a partially filled, or full, one. We have then at the outset all the factors that are likely to promote further hæmorrhage. Seven years ago I pointed out (Brit. Jour. Surg., 1928, xvi., 203) that saliva had a very potent action in decreasing the clotting time, whereas the acid gastric juice, especially in the case of an ulcer, delayed the clotting of blood very considerably.

[1] Trans. Roy. Soc. Trop. Med. Hyg., 1933–34, xxvii., 355.

It would appear to me that in Prof. Meulengracht's treatment he is providing—

(1) That the patient's general health should be maintained.
(2) That the movements of the stomach are reduced by its being kept partially filled.
(3) That the acid juice is neutralised by food and alkalis.
(4) That a free flow of saliva is produced to further assist clotting.
(5) That the patient is relieved from the stress of thirst and an uncomfortable posture, and, as the article points out, is more easily nursed.

I hope that physicians in this country will give his method a trial, and I shall look forward to seeing in your columns at some later date further figures on this subject.—I am, Sir, yours faithfully,

Harley-street, W., Dec. 11th. JOHN B. HUNTER.

PAIN AND EUTHANASIA

To the Editor of THE LANCET

SIR,—I have read with interest your report of the inaugural meeting of the Voluntary Euthanasia Legalisation Society, and I have noticed how the argument returns again and again to the inadequacy of drugs, particularly morphia, to relieve intolerable pain. I wonder if the members of this society are aware that no patient need suffer intolerable pain from any local disease situated below the segmental level at which a bilateral chordotomy can be done—that is, the fifth cervical segment of the spinal cord. It is true that in a particular case the operation might prove fatal; but that surely would meet with the approval of the Society. As a matter of fact, the operation is not particularly difficult or dangerous, and I have never known of a death directly due to it. This is not put forward as an argument against the aims and objects of the Voluntary Euthanasia Legalisation Society; but it does seem to me to limit the field of their concern very considerably. The real purpose of this letter is to suggest that those who are especially concerned with the treatment of such conditions as, for example, inoperable carcinoma of the pelvic organs, might give more than a passing thought to the possibility of the surgical relief of pain.—I am, Sir, yours faithfully,

London, W., Dec. 14th. A. S. BLUNDELL BANKART.

To the Editor of THE LANCET

SIR,—I imagine that I am not the only doctor who was surprised to see three pages of THE LANCET occupied by an account of the inaugural meeting of the Voluntary Euthanasia Legalisation Society. Why should pages of a medical journal be filled with a description of a meeting to advocate measures which have nothing at all to do with medicine, except that a number of medical persons are members of the society? And, when one reads the report, one finds no reason for its publication in THE LANCET. The gist of the résumé is that some deaths are painful; and that some clergymen see nothing incompatible between Christianity and euthanasia. That did not need three pages.

One may presume, Sir, that you know the tastes of your readers, and that the report was inserted because you thought that it was proper to do so. All I desire to do is to make clear one misunderstanding that seems to lurk in Lord Moynihan's mind. He is reported to have said, "There were denominations within the Christian Church whose members had no right to such relief as that for which sanction was desired; these persons were asked to stand aside." These persons do not believe that they alone have no right to disobey the laws of God; they believe that it is a part of their duty to inculcate these laws into the minds of others; and, therefore, they will not stand aside. Lord Moynihan can rest assured that "these persons" will do everything in their power to rouse public opinion against a procedure which they regard as mortally sinful. These same persons will not be misled by Mr. Norwood, who is reported to have said that "the principal concern of religion was more with the entrance and conduct of life than with its exit." They will remember the divine assurance that the mode of exit from life of the penitent thief had a very definite effect on his comfort elsewhere.

The sole purpose of this letter is to point out that there are various organisations, some Roman Catholic, some undenominational—some medical and some lay—which are prepared for the battle.

I am, Sir, yours faithfully,

Park-square West, N.W., Dec. 13th. A. PINEY.

A TEST FOR CANCER

To the Editor of THE LANCET

SIR,—The letter published in your columns on Dec. 14th above the signature of Dr. G. Burford and others is either of extreme importance or very mischievous. But whether it relates to a genuine test for cancer or to one of no value it is almost certainly going to attract a number of guineas to the address given in Park-crescent. I will be obliged if you will give equal publicity to the following challenge—I will send to that address twenty specimens of urine collected under the conditions mentioned and clearly labelled A to T, the results of the tests, together with the correct diagnosis in each case, to be published subsequently and prominently in your columns. But I do not propose to send any money in payment for this test because, if the claims made are substantiated, a much greater reward is inevitable.

I am, Sir, yours faithfully,

London, W., Dec. 16th. T. IZOD BENNETT.

GASTROCOLIC FISTULA

To the Editor of THE LANCET

SIR,—I should like to add my opinion to that of Dr. Hurst (in your issue of Nov. 16th) that the result of dealing with a gastrocolic fistula by simple disconnexion is an operation which has not necessarily a high mortality. I have not met with a single case during 1935, but I performed the operation three times during 1934 and recovery was uneventful in each case. Although I agree with Dr. Hurst that thorough lavage is of great advantage, I do not agree that the operation calls for the exceptional skill he suggests, and I am putting these cases on record to encourage surgeons of ordinary ability when they feel called upon to deal with such cases in this way.

Precautions making for safety in this operation are:—

(1) To avoid soiling the site during operation, and to drain it afterwards.
(2) To close the colon and jejunum without narrowing—in one case I left some narrowing of the colon at the site of suture and this persisted some 9 months later.
(3) To support sutures in a somewhat unhealthy gut with an omental graft.
(4) To prevent by cæcostomy postoperative distension of the proximal colon, which would lead to strain on the suture line.

I am, Sir, yours faithfully,

Harley-street, W., Dec. 11th. TURNER WARWICK.

EPIDEMIOLOGY OF PUERPERAL SEPSIS

A NEW INVESTIGATION

IT is estimated that more than a third of the mothers who die after childbirth every year in this country die as a result of sepsis. Generally speaking, over 70 per cent. of the fatal cases of puerperal sepsis are due to the hæmolytic streptococcus.

THE SOURCE OF THE INFECTING ORGANISM

The source of the infecting organism has been the subject of keen research, a crucial question being whether it is usually present in the genital tract before labour, or whether it comes to it from the outside.

The *genital flora* has been extensively studied before, during, and soon after labour, with the result that the hæmolytic streptococcus is found to occur in about 3 per cent. of the patients studied. It appears, however, that a minority only of these "carriers" become infected in the puerperium, the infection when it does occur being generally mild and quite unlike that usually associated with fatal streptococcal infection. The explanation lies in the fact that the hæmolytic streptococci do not form a homogeneous group, and that those found in the genital canal of pregnant and parturient women are not pathogenic to the human subject. The work of Lancefield,[1] Hare and L. Colebrook,[2] and Lancefield and Hare[3] shows that the biochemical and serological characters of hæmolytic streptococci are closely correlated with the pathogenic capacities. For example, the streptococci responsible for bovine mastitis belong to a well-defined group rarely found in severe human infections; while the majority of strains from acute human disease belong to another group distinct from the bovine strains. The genital streptococci found as saprophytes before and during labour fall into serological groups different from that containing the streptococci found associated with acute disease in the human being. Further work by Hare and Colebrook[4] has demonstrated that not only the streptococci present in the flora of the genital tract but those found present on the normal skin of the hand and perineum, and in the bowel, show no evidence of marked pathogenicity for man.

There remain for consideration streptococci from *extragenital septic conditions* and from the *respiratory tract*, both of the patient and of those in contact with her. Respiratory streptococci have been incriminated with varying degrees of vehemence as a source of puerperal infection, while other workers boldly deny their ætiological significance.

The available evidence on the whole points to the respiratory streptococci as the causal organisms of puerperal sepsis, and the recent observations of Smith[5] support this view. He found strains of streptococci identical with the infecting strain in the respiratory tract of the patient or a contact in 39 of the 49 cases of puerperal sepsis studied.

DIFFICULTIES AND POSSIBLE FALLACIES

The connexion between a particular hæmolytic streptococcus carried by an apparently healthy person and a streptococcal puerperal infection is difficult to demonstrate. It is necessary to make a careful epidemiological study of the infecting strains in a large number of women with puerperal infection, and of the strains found in streptococcal carriers concerned more or less immediately with the woman during and after the time of her confinement, before any conclusions can be drawn. Dr. Dora Colebrook, working at the Bernhard Baron Memorial Research Laboratories attached to the isolation block of Queen Charlotte's Hospital, has now carried out a study, on lines similar to that published by Smith, which has just been published as No. 205 of the Special Report Series of the Medical Research Council.[6]

Dr. Colebrook discusses fully the fallacies inherent in this method of approach to the problem. Briefly, no source of infection can be considered a possible one unless the streptococcus found in it is identical with that in the infected genital tract. In addition, adequate opportunity for the passage of the streptococcus must be demonstrated. The two main problems are therefore the establishment of identity between strains of streptococci, and the adequate exploration of the human environment of the patient.

CRITERIA AND METHODS ADOPTED

The criterion of identity adopted in this study was a serological one. Strains were classified into Griffiths'[7] types by direct agglutination with monospecific sera. This revealed a series of provisional identities which were confirmed by further test. A complete serological identity between two strains can be proved only if each absorbs all the agglutinins from the antiserum prepared against the other. The method must be rigidly quantitative to be of any value. Accordingly the minimal absorbing dose (M.A.D.) of each strain for its homologous serum was determined, using the latter at a definite multiple of its agglutination-end-point concentration, and the test strain was considered identical only if 3 M.A.D. would remove 98·5 per cent. of the agglutinins from the serum. Control absorptions were made with strains known to be heterologous.

The patients used for this investigation were suffering from a pyrexia, more or less severe, whose onset was within three weeks of confinement. Swabs were taken from the genital tract and from the anterior nares, tonsils, and sometimes gums. The contacts included nurses, doctors, the "handy-women" at the confinement, and the husband and children of the patient. Attention was paid to points of special ætiological importance, such as a person with a recent history of tonsillitis, scarlet fever, or chronic nasal discharge. Dr. Colebrook points out that the ease with which hæmolytic streptococci can be passed from person to person makes it difficult to be certain that many of the contacts, of necessity swabbed some time after the infection had developed, were not carriers as a result of dissemination of the puerperal strain. (Contact swabbing was carried out as soon as possible after the discovery of streptococcal infection.) In addition, there can be no conclusive evidence that identical strains in a contact and the genital tract of the patient had not been independently acquired. When the type of streptococcus is relatively rare, the likelihood is remote, but with a prevalent strain the possibility must be considered.

The finding of an identical streptococcus in contact and patient, therefore, indicates only a *possible* source of infection, though in certain cases circumstances may point to its being a very probable one. The material gathered was considered complete if all persons that could be ascertained as having taken part in the conduct of the labour had been examined, or if, in spite of one or more attendant-contact swabs being missed, identical streptococci were found in another of the contacts. Incomplete

material included all groups in which a possible swab was missed, and no identity between genital and contact strains was established.

RESULTS OF THE PRESENT INVESTIGATION

Sixty-seven patient-contact groups were investigated, and an extragenital strain serologically identical with the infecting strain was found in 48 of them. In 14 the possible source was present in the respiratory tract of both patient and contact. In 11 an identical strain was found only in the patient herself (in 5 of these groups the material was incomplete). In 23, identical strains were found in contacts only. In 4 groups technical difficulties prevented the establishment of identity, though streptococci were found in contacts. In the 15 remaining groups, no possible source of infection was found.

A possible source was found in the patient's own respiratory tract 24 times.

The social relationship of the patient with the carrier is of interest. A strain identical with the infecting strain was isolated from—

(1) The doctor	.. ..	in 5	patient-contact groups
(2) The midwife	.. ..	,, 15	
(3) The handywoman	..	,, 3	
(4) The husband of the patient		,, 3	
(5) The mother or father of the patient	.. .. ..	,, 2	
(6) A child of the patient	..	,, 8	

and in 3 groups the infecting strain was found in the ear of the patient's child, the septic foot of the patient's child, and the septic foot of the patient.

To summarise, an extragenital strain was found for 48 patients out of 67. Dr. Colebrook points out that—

"owing to failure, in the early stages of the work, to realise the importance of swabbing the nose as well as the throat of patient and contacts, and the members of the household of the patient as well as her attendant-contacts, and owing to the difficulties experienced in securing the full complement of swabs, and to the use, in certain cases, of an ineffective swabbing technique, the figure quoted above is fallaciously low. Thus, in the 31 patient-contact groups in which the patients, and, so far as could be ascertained, all their attendant-contacts were swabbed, a possible source for the infection of 27 (87 per cent.) patients was found, whereas in the 32 patient-contact groups in which swabs were known to be missing, the percentage was only 65; in the case of 4 only of the 15 patients for whose infection no source was found was the full number of swabs received from patient and attendant-contacts, and in the case of one only of these 15 patients were swabs taken from the children of the household."

IMPORTANCE OF RESPIRATORY CARRIERS

These figures indicate that the respiratory source of infection must be taken very seriously. If Dr. Colebrook's figures may be taken as a representative sample of cases of puerperal sepsis, a large proportion of these deaths from this cause are attributable to infection by a carrier of pathogenic streptococci. The causal linkage may not be established with mathematical certainty, but it is established as firmly here as in many other diseases where a superstructure of stringent precautionary measures has been based on the laboratory evidence. And the fact that the majority of strains isolated from patient and contact fall into a limited number of Griffiths' types, types commonly met with in other diseases (including respiratory) caused by hæmolytic streptococci, affords indirect support to her finding. The result of rigid precautionary measures in the conduct of labour in certain hospitals indicates that technical improvements can lower the incidence of sepsis. Adequate masking of personnel, intelligently applied antiseptic technique, and the exclusion of carriers from the attendants are among the measures indicated for trial. In addition, steps should be taken to ensure the continued exclusion of carriers from contact with women in labour and during the puerperium by collaboration between the bacteriologist and the clinician.

The familial carrier is a problem that this report has brought to light, and although the number of families investigated by Dr. Colebrook is insufficient to give any indication of the magnitude of the risk of infection to which a pregnant woman is exposed to in her family life, the suggestion that here is an indication for the education and assistance of the expectant mother on matters of hygiene which may have important results is not the least valuable of the conclusions Dr. Colebrook has to offer.

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PHYSIOLOGICAL BASES OF NUTRITION

REPORT OF A TECHNICAL COMMISSION OF THE LEAGUE OF NATIONS

THE report on the physiological bases of nutrition drawn up by the Technical Commission of the Health Committee of the League of Nations which met [1] in London from Nov. 25th–29th was published at Geneva on Dec. 6th. The Commission is in agreement with the conclusions of the Burnet and Aykroyd report [2] that deficiencies in important nutrients are a common feature of modern diets and that these deficiencies usually occur in the protective foods (foods rich in minerals and vitamins) rather than in the energy-giving foods (proteins, fats, and carbohydrates). The Commission has set out its findings in two parts: Part I. dealing with the requirements of energy-giving foods; Part II. with mineral and vitamin requirements.

PART I

Energy, Protein, and Fat Requirements

CALORIE REQUIREMENTS

An adult, male or female, living an ordinary every-day life in a temperate climate and not engaged in manual work is taken as the basis on which the needs of other age-groups are reckoned. An allowance of 2400 calories net per day is considered adequate to meet the requirements of such an individual.

The following supplements for muscular activity should be added to the basic requirements:

Light work:	up to	50 calories per hour of work.	
Moderate work:	,,	50–100	,, ,,
Hard work:	,,	100–200	,, ,,
Very hard work:	,,	200 calories and upwards per hour of work.	

The energy requirements for other ages and for

[1] THE LANCET, Nov. 30th, p. 1270, and Dec. 7th, p. 1305.
[2] Ibid., August 10th, p. 341.

mothers can be obtained from the following table of coefficients:

Age (years).	Coefficient.	Calories.
1– 2	0·3	720
2– 3	0·4	960
3– 5	0·5	1200
5– 7	0·6	1440
7– 9	0·7	1680
9–11	0·8	1920
11–12	0·9	2160
12 and upwards (male and female)	1·0	2400
Women		
Pregnant	1·0	2400
Nursing	1·25	3000

The requirements for babies under 1 year are difficult to specify except in terms of body-weight, but the following allowances are considered adequate:

Age (months).	Calories per kilogramme of body-weight.
0– 3	100
3– 6	90
6–12	80–90

The muscular activities characteristic of every healthy child and adolescent necessitate additions to the basic requirements. It is suggested that the activities of children of both sexes from 7–11 years be considered as equivalent to light work, of boys from 11–15 years as moderate work, and of girls from 11–15 upwards as light work.

Allowance must also be made for women engaged in household duties, whether pregnant or not; these have to be reckoned as equivalent to light work for eight hours daily.

PROTEIN REQUIREMENTS

In practice the protein intake for all adults should not fall below 1 gramme of protein per kilogramme of body-weight. The protein should be derived from a variety of sources, and it is desirable that a part of the protein should be of animal origin.

During growth, pregnancy, and lactation, some animal protein is essential, and in the growing period it should form a large proportion of the total protein.

The following allowances of total protein are recommended:

Age (years).	Grammes per kilogramme of body-weight.
1– 3	3·5
3– 5	3·0
5–15	2·5
15–17	2·0
17–21	1·5
21 and upwards	1·0
Women	
Pregnant	2·0
Nursing	2·0

All the above figures on which the Commission has agreed are average values and it is essential that they should be interpreted in the light of this fact.

FAT REQUIREMENTS

Fat must be a constituent of the normal diet, but the data at present available do not suffice to permit a precise statement of the quantity required.

In cold climates the energy-content of the diet should be increased.

PART II

Mineral and Vitamin Requirements

The Commission recognises the fact that the deficiences of modern diets are usually in the *protective foods* (foods rich in minerals and vitamins) rather than in more strictly *energy-bearing foods* (rich in calories). Among the former are, first and most important, milk and milk products, eggs and glandular tissues; then green-leaf vegetables, fruit, fat fish, and meat (muscle). Among the energy-bearing foods of little or no protective power are sugar, milled cereals, and certain fats.

Of energy-giving foods, unmilled cereals are not rich in protective nutrients and the more they are refined the less is their protective power. Many fats, especially when refined, possess little or no protective constituents. Refined sugar is of value only as a source of energy; it is entirely devoid of minerals and vitamins. The increasing habit of large sugar consumption tends to lessen the amount of protective foods in the diet and is to be regarded with concern.

REQUIREMENTS OF PREGNANCY AND LACTATION

The Commission has attempted to define the quantitative needs of protective foods for perfect nutrition in terms of the requirements for the pregnant and nursing woman. She should be regarded as the member of the population needing the greatest "protection" in order to ensure adequate physical endowment for the child at birth and optimum nutrition during infancy.

The greatest difficulty in arranging such a diet is to provide adequate calcium, phosphorus, iron, and vitamins B_1, B_2, C, and D.

Milk, whole or skimmed, is a rich source of calcium salts and phosphates and of vitamin B_2, also a good source of vitamin B_1; milk fat is an excellent source of vitamin A. Eggs contain vitamins A, B_1, B_2 and D and are rich in iron. The proteins of these foods are not only themselves of the highest nutritive value, but also improve the utilisation of the protein contained in cereals and vegetables. Milk has an additional advantage in the abundance and availability of its calcium salts and phosphates; these enhance the effect of any vitamin D derived from other articles of diet or from sunshine. Milk, although itself poor in iron, renders more effective the iron contained in the diet.

Ordinary diets are usually inadequate in vitamin D and, except in sunny seasons and sunny countries, a small daily ration of cod-liver oil is to be recommended in the diet of the pregnant and nursing mother and in that of the growing child. Fish-liver oils are the richest known natural sources of vitamin A and are also important sources of iodine. In goitrous regions, where sea-fish are not available, the provision of extra iodine in the form of iodised salt or in some other way is recommended.

An extended dietary use of the potato is recommended to replace part of the sugar and highly milled cereals in the ordinary diet. Potatoes provide extra vitamin C and more readily available calcium and phosphorus than are present in cereals. Potatoes also yield more iron and B vitamins than milled cereals.

The above paragraph applies to countries where potatoes are abundant, but it is of general application, due account being taken of local resources.

REQUIREMENTS OF OTHER ADULTS AND CHILDREN

Tables I., II., III., and IV. contain details of specimen diets derived from investigations made in Great Britain, the United States, and Scandinavian countries, considered satisfactory for a pregnant or nursing woman and for infants and children of ages up to 5 years. They are put forward as models which could be modified in many particulars according to national dietary habits and supplies, provided that the dietary principles contained in them are duly regarded.

The protective foods in Table I. are arranged to yield approximately 1400 calories without inclusion of cereals, fats, or sugar; these can be added as

TABLE I.—DIETARY SCHEDULE FOR THE PREGNANT AND NURSING WOMAN

A.—*Protective Foods*

Food.	Amount.	Calcium.	Phosphorus.	Iron.	Iodine.	Vitamin A	Vitamin B_1	Vitamin B_2	Vitamin C	Vitamin D	Calories.
	Grammes.			Milligrammes.		International units.			International units.		
Milk	1000	1·2	0·9	2·4	0·02–0·05	3000	50–150	Rich.	Poor.	Poor.	660
Meat (or fish or poultry)	120 (*a*)	—	0·3	$\frac{3·0}{2}$ (a_1)	..	Poor.	Poor (*b*).	,,	,,	None.	260
Eggs (one)	50	—	0·1	1·4	..	1300	14	Rich.	None.	40 (*c*).	70
Cheese (Cheddar)	30	0·3	0·2	0·4	..	800	Poor.	Good.	Poor.	Poor.	125
Green and leafy vegetables	100 (*d*)	0·5	—	1·0	..	100	25 (raw)	,,	300 (raw)	None.	30
Potatoes	250	—	0·2	3·0	..	Poor.	50	,,	320 (cooked)	,,	250
Legumes, dried	10 (*e*)	—	—	2·0	..	,,	15	,,	None.	,,	35
Cod-liver oil	3·5	—	—	—	Richest source.	3500	None.	None.	,,	300	30
An available source of vitamin C (from raw fruits and vegetables)	..	..	..	..	..	..	..	..	250–500	..	..
Total yield	..	2·0	1·7	11·7	Adequate.	8700	154–254	Adequate.	870–1120	340	1460

B.—*Supplementary Energy-yielding Foods by means of which the Individual's Energy Requirements can be met*

Cereals as needed—											
Highly milled	250 (*f*)	—	0·2	3·0	..	..	..	..	..	..	1000
or											
Whole grain	250 (*g*)	—	0·9	9·0	..	..	270	..	..	..	1000
Fats as needed. Sugar as needed.											

(*a*) Calculations for lean meat.
(a_1) One-half calculated as available iron.
(*b*) Except glands (liver and kidney) and pork muscle.
(*c*) 12 eggs equivalent to 3·5 g. cod-liver oil.
(*d*) Estimated on basis of cabbage as type.
(*e*) Calculated as beans.
(*f*) Calculated as white flour.
(*g*) Calculated as whole wheat.

TABLE II.—*Infants*

AGE 0–1

Breast-feeding is strongly recommended during the first nine months of life. Where and when sunshine is not abundant, each breast-fed infant should receive a small daily ration of cod-liver oil, up to 6 grammes daily, to supply the antirachitic vitamin D. This is even more important for artificially fed infants. Fresh fruit and/or vegetable juice to provide antiscorbutic vitamin C should also be given to every infant, especially the artificially fed.

When breast-feeding is not possible, the basis of the infant's diet should be milk, suitably modified if necessary, and supplemented by an adequate amount of substances rich in vitamins A, C, and D.

Where complete breast-feeding is impracticable, partial breast-feeding is urged, and the supplementary diet should consist of cow's milk and other suitable protective foods.

AGE 1–2 (1000 CALORIES)

A.—*Protective Foods*

Food.	Amount (grammes).	Calories.	Protein (grammes).
Milk	1000	660	32
One egg (or equivalent, as 30 grammes meat or fish or liver, if available)	48	70	6
Green leafy vegetables	30–60	15	—
Potato (and other root vegetables)	50	50	1
Cod-liver oil	3	30	—
A source of vitamin C (raw vegetable or fruit)	—	—	—
		825	39

B.—*Supplementary Energy-yielding Foods*

Fats (butter if possible)	3·5	25	—
Cereals (as wheat)	50	150	7
Total		1000	46

TABLE III

AGE 2–3 (1200 TO 1300 CALORIES)

A.—*Protective Foods*

Food.	Amount (grammes).	Calories.	Protein (grammes).
Milk	1000	660	32
One egg (or equivalent, as 30 grammes meat or fish or liver, if available)	48	70	6
Green leafy vegetables	60–100	20	2
Potato (and other root vegetables)	100	100	2
Cod-liver oil	3	30	—
A source of vitamin C (raw vegetable and fruit)	—	—	—
		880	42

B.—*Supplementary Energy-yielding Foods*

Fat (butter if possible)	3·5	25	—
Cereals (as bread)	100	300	14
Total		1205	56

TABLE IV

AGE 3–5 (1400 CALORIES)

A.—*Protective Foods*

Food.	Amount (grammes).	Calories.	Protein (grammes).
Milk	1000	660	32
Egg	48	70	6
Meat, fish, or liver	30	40	6
Green leafy vegetables	100	30	3
Potato	150	150	3
Cod-liver oil	3	30	—
A source of vitamin C (raw vegetable or fruit)	—	—	—
		980	50

B.—*Supplementary Energy-yielding Foods*

Fats (butter if possible)	7	55	—
Cereals (as bread)	125	400	17
Total		1435	67

required to satisfy the energy requirements of any individual. For adults other than the pregnant and nursing woman, the amount of protective foods might be reduced, if necessary, for economic reasons. For growing children, however, the maintenance of a high proportion of protective foods should be the aim.

In Tables II., III., and IV., specimen diets are drawn up on the above basis for age-groups, 0–1, 1–2, 2–3, and 3–5 years. Since the rate of growth of a child decreases with advancing age, approximately the same amount of the protective foods will suffice for 10–15-year-old children as is required for the 5-year-old child.

GENERAL RECOMMENDATIONS

Although a *simplified* diet may be so constituted from a few protective foods as to be satisfactory, it is a general principle that *variety in diet* tends to safety, provided it contains a sufficiency of the protective types of food materials.

White flour in the process of milling is deprived of important nutritive elements. Its use should be decreased and partial substitution by *lightly milled cereals* and especially by *potatoes* is recommended. The consumption of an excessive amount of *sugar* is to be condemned, and in this case also partial replacement by potatoes is urged.

Milk should form a conspicuous element of the diet at all ages. The Commission commends the tendency manifested in some countries to increase the daily intake up to one litre per day for pregnant and nursing women, as well as to provide an abundant supply for infants, children of all ages, and adolescents. The practice of providing milk either free or at a reduced price to these is highly recommended. The Commission desires to draw attention to the high nutritive value of *skimmed and separated milk*, which, although deprived of its vitamin A through removal of the fat, retains the protein, the B and C vitamins, the calcium and other mineral elements. The Commission deplores the large wastage in many countries of this valuable food.

Fresh vegetables and/or fruit should always be constituents of the normal mixed diet. Adequate provision of the vitamins other than vitamin D can be readily accomplished by inclusion in the diet of optimum amounts of protective foods. Where these are not available, only such *vitamin preparations as are officially controlled and approved* should be permitted.

The Commission emphasises the need for provision of *extra vitamin D*, either as cod-liver oil or as irradiated products, wherever and whenever sunshine is not abundant, especially in the period of growth and during pregnancy.

PROBLEMS RECOMMENDED FOR FURTHER STUDY

1. Assessment of the nutritional state of children.
2. Nutritive food requirements during the first year of life.
3. Minimum vitamin and mineral requirements.
4. Minimum fat requirements.
5. The nutritive and "supplementary" values of the different protein-containing foods, to determine to what extent and in what forms animal protein is necessary for growth and health.
6. The relative nutritive value of different cereals according to the degree of milling.
7. The extent to which the increasing consumption of sugar is detrimental to health.
8. Influence of climate on food requirements.
9. The extent to which diets in common use fall below the standards recommended in this report.

MEDICINE AND THE LAW

Impersonating a Registered Practitioner

Ernest Pearce Freeman, who had posed as a doctor, was sentenced to four years' penal servitude at Birmingham assizes last week. The gist of the charges against him was that he had represented himself to be a Dr. Louis Rabinov and to possess the professional qualifications shown against Dr. Rabinov in the Medical Register Colonial List. Freeman had bought and successfully conducted a medical practice at Hall Green, Birmingham; he had also obtained clothes from a Birmingham tailor, drugs from a chemist, and a car from a motor dealer in the name of Dr. Rabinov and in circumstances which justified the jury in finding him guilty of false pretences and forgery. He pleaded guilty to illegalities in respect of dangerous drugs. A charge of bigamy was, at his request, taken into account by the court in passing sentence. Further charges of indecent assault arose out of Freeman's treatment of women patients who believed themselves to be consulting a genuine doctor. This aspect of the case recalls the old ruling in R. *v.* Rosinski, where it was held that an assault was committed when a man, professing to act as a medical adviser, fraudulently induced a girl to strip by falsely alleging that it was necessary for medical reasons to do so. It was contended on Freeman's behalf that he had done nothing to his women patients except in the course of treating them as a doctor would have done. With the judge's consent, the prosecution did not proceed with these charges of indecent assault.

The remarkable adventures of Freeman, partly given in evidence during the trial and partly supplied by the police after his conviction, had included some connexion with medicine. He left his home in Belfast at the age of 14 and went to America. A claim to have qualified at the Chicago College of Medicine was not substantiated by police inquiries. In 1915 he returned to England and served oversea with the Royal Fusiliers, being discharged in 1917 with a very good character. He went back to the United States and claimed to have acted as assistant to a doctor in Utah and to have worked in the State hospital. He left this post with moneys stated to have been fraudently collected and returned to England. In 1922 he married; next year he absconded from a firm in Newcastle and re-entered America with a false passport in the name of Kenneth McLennan. Working in Buffalo as an office manager and salesman, he stole and filled in blank cheques and drew the money. Convicted for these offences, he was deported and he landed in Glasgow in 1925. Presently he was arrested for a former embezzlement at Newcastle and went to prison for three months. On release he became manager of a London dance hall, but he falsified accounts and embezzled money with the result that he went to prison for another 12 months. Later he was heard of at Singapore, obtaining money there for the formation of a company. In March, 1934, he was at Melbourne where he made the acquaintance of Dr. Louis Rabinov, a practitioner with Australian and Irish degrees. He told Dr. Rabinov that his own family in Belfast had known Mrs. Rabinov in Dublin. Dr. Rabinov seems to have summed up his visitor as an impostor and he suspected him of carrying off a copy of his diploma. In September Freeman came back to England and acted as locum tenens to doctors in London and on the South Coast. He then, in answer to an advertise-

ment, bought a medical practice at Hall Green, Birmingham. He showed the vendor a letter which was a striking testimonial to Dr. Rabinov from the Anglo-Austral Chemical Co. Ltd., signed "E. P. Freeman, Managing Director." At Birmingham he had the impudence to put up a plate calling himself "Dr. Louis Rabinov, M.B., B.S. (Melbourne), D.G.O. (Dublin)"; on the wall of his surgery was a diploma purporting to have been given to Dr. Rabinov in Melbourne. Witnesses described Freeman as a man of forceful personality. There was evidence that he actually increased the practice he had bought. When he took it over in 1934 there were 24 panel patients; in the following January there were 84 and in April 133. There were subsequent negotiations for the resale of the practice. He had lately purchased an hotel at Cowes, describing himself as Dr. Richard Grant, lately arrived from abroad.

Whatever Freeman's medical qualifications may have been, Mr. Justice du Parcq passed sentence on him as "a crafty criminal and a danger to society." Members of the medical profession will probably be startled at the ease with which a rogue can adopt the identity of a registered practitioner. There have been other instances in the past few years of this kind of fraud, the criminal sometimes taking advantage (like Freeman) of the remoteness of his victim's place of practice, and sometimes taking one of the commoner surnames on the Register with the obvious hope of making his identification more difficult. The case suggests that, in dealings with strangers—e.g., in engaging a locum tenens, taking a partner, or selling a practice—no precaution should be spared, though it is hard to see how the false Dr. Rabinov could have been unmasked without more detective research than the average practitioner has time for.

Naturopath and Illegal Operation

Another case at the Birmingham assizes was that in which John Wilson, who described himself as a naturopath and osteopath with American training, was found guilty of criminal abortion. The offence was committed upon a young woman who had acted as his "receptionist." In the judge's view the jury's verdict meant that the girl's story of Wilson's relations with her was to be believed in spite of his denials. The details of the case are of no special interest except for certain observations of Mr. Justice du Parcq. There was no suggestion that Wilson was a professional abortionist or that he had posed as a registered practitioner. But the judge pointed out that the medical knowledge claimed by the accused made the offence more serious because he must have known the dangerous consequences. Fortunately the medical treatment which the young woman afterwards received had saved her life; otherwise, said the judge, Wilson would have been standing his trial for manslaughter at least.

THE fifth attempt on Mount Everest will be made next year under the leadership of Mr. Hugh Ruttledge. In 1933 the party consisted of 16 men, but this time the number has been limited to 12 to reduce difficulties of porterage. The final medical examination of picked candidates was carried out by the central medical establishment of the Royal Air Force and the selected 12 include Dr. C. B. Warren, Dr. Noel Humphreys, and Mr. F. H. L. Wigram, a medical student at St. Thomas's Hospital.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Capt. C. M. R. Thatcher to *Pembroke* for R.N. Hospital, Great Yarmouth.

Surg. Comdrs. H. L. Douglas to *Pembroke* for R.N.B.; H. E. Scargill to *Excellent*; A. H. Joy to *President* for R.N. College, Greenwich; C. H. M. Gimlette to *Pembroke* for R.N. Hospital, Chatham; and J. C. Kelly, D.S.C., to *Amplion*.

Surg. Lt. Comdr. T. C. H. Neil to rank of Surg. Comdr.

Surg. Lt. Comdrs. J. Johnston to *Curacoa*; H. J. McCann to *Victory* for R.N.B.; S. J. Savage to *Drake* for R.N.B.; E. T. S. Rudd to *Dolphin*; and L. P. Spero to *President* for course.

Surg. Lt. G. D. Wedd to *Scarborough* (on recommg.).

Surg. Comdrs. (D). W. C. Murray, O.B.E., and J. F. Place to rank of Surg. Capt. (D).

Surg. Lt.-Comdrs. (D). A. Dally, A. D. McHaffie, A. Macpherson, and J. T. Wood to rank of Surg. Comdr. (D).

ARMY MEDICAL SERVICES

Col. T. S. Blackwell, late R.A.M.C., retires on ret. pay.

Lt. Col. J. A Renshaw, from R.A.M.C., to be Col.

ROYAL ARMY MEDICAL CORPS

Maj. P. J. Ryan, M.C., to be Lt.-Col.

Short Serv. Commissions.—Clayton Henry George to be Lt. (on prob.) and confirmed in his rank. (Substituted for notices in THE LANCET of August 31st and Nov. 2nd.)

Lt. J. M. Carnow to be Capt.

REGULAR ARMY RESERVE OF OFFICERS

Lt.-Col. A. M. Pollard, D.S.O., having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY

Capt. E. White to be Maj.

O. T. Wade (late Cadet Lce.-Corpl., Repton Sch. Contgt., Jun. Div., O.T.C.) to be Lt.

ROYAL AIR FORCE

Squadron Leaders J. D. Leahy, M.C., to R.A.F. Station, Calshot, for duty as medical officer; W. J. G. Walker to No. 7 Flying Training School, Peterborough, for duty as medical officer; and T. J. X. Canton to R.A.F. Station, Manston, for duty as medical officer.

Flight Lt. G. H. J. Williams to Aeroplane and Armament Experimental Establishment, Martlesham Heath.

Flying Offrs. P. A. Cooper to No. 1 School of Technical Training (Apprentices), Halton; T. J. M. Gregg and R. L. Soper to Princess Mary's R.A.F. Hospital, Halton; R. S. B. McClean to R.A.F. Hospital, Cranwell; L. N. Trethowan to R.A.F. Station, Bircham Newton; A. S. Amsden to No. 7 Flying Training School, Peterborough; H. E. Bellringer to Home Aircraft Depôt, Henlow; C. M. Carlyle-Gall to Central Flying School, Upavon; R. A. Cumming to No. 11 Flying Training School, Wittering; W. J. L. Dean to No. 2 Flying Training School, Digby; S. R. C. Nelson to No. 6 Flying Training School, Netheravon; R. S. Peill to No. 5 Flying Training School, Sealand; and J. B. Wallace to R.A.F. Depôt, Uxbridge.

NUNEATON GENERAL HOSPITAL.—The annual report of this hospital shows that its income is £10,700, and is mainly derived from the weekly contributions of work-people. The balance of income over expenditure is £1050, but £1000 will have to be spent to meet the cost of a new maternity ward which is badly needed.

INGHAM INFIRMARY, SOUTH SHIELDS.—On Dec. 7th Sir James Roundhead opened the new buildings at this hospital, which include a ward block, out-patient department, two operating theatres, kitchens, and an enlargement of the nurses' home. The extensions will eventually cost £60,000, and over £11,000 is still required. With the new extensions the hospital now has 183 beds.

OBITUARY

WALTER SYDNEY PERRIN, M.Chir. Camb., F.R.C.S. Eng.

Mr. Perrin's death on Dec. 8th was unexpected, for he had continued his work at the London Hospital until a fortnight before. He was an able surgeon and a man learned in many directions; and the ending of his life at the early age of 53 will be deeply regretted by his associates and those who enjoyed his friendship.

The son of Walter Perrin, he was educated at the City of London School and at Cambridge, where he was a foundation scholar of Caius College, and was placed in the first class in both parts of the Natural Sciences Tripos. At this time he had no intention of taking up medicine, and for ten years his attention was given chiefly to the study of protozoa. Beginning in 1900 with publication of researches on the life-history of one of the trypanosomes, he secured the Walsingham prize and the Shuttleworth research studentship, and in 1905 was appointed university demonstrator in zoology—a post he was to hold for five years. In 1910, at a stage when his career as a zoologist had already shown performance as well as promise, he was obliged to seek a more remunerative occupation, and he set himself to qualify as a doctor. To fulfil this end he had to support himself by teaching others, including fellow candidates, and his skill as coach won him a great reputation. While still a student he became demonstrator in anatomy at the London Hospital in 1910, and he continued this work until he qualified in 1912, winning on the way the surgical and medical scholarships—and incidentally maintaining his prowess as a boxer. House appointments followed, both at his own hospital and at Great Ormond-street, and the outbreak of war found Perrin surgical registrar at the London, where he had lately won the triennial Jonathan Hutchinson prize for an essay on intussusception. He had also become F.R.C.S. and had taken the Cambridge degree of master of surgery, and these qualifications brought him the command of the Belgian Field Hospital at Furnes, and later the post of surgical specialist in the R.A.M.C. with rank of major. Returning to the London after the war he became first assistant in the surgical unit, and in 1921 was elected to the staff. Besides his surgical work he continued for a time to lecture in anatomy, and he so far retained his interest in this subject that eighteen months ago he was invited to serve on the board of electors to the anatomy chair at Cambridge, where he was an examiner in surgery. A keen freemason, he was a member of the staff of the Royal Masonic Hospital, and he was also consulting surgeon at King George's Hospital, Ilford, and the Finchley Memorial Hospital.

MR. PERRIN

As a surgeon Perrin's interests turned increasingly to rectal diseases, and he held office as president of the subsection of proctology of the Royal Society of Medicine. Mr. Hugh Lett, to whom we are indebted for biographical details, writes that his "careful investigation of his cases, sound judgment, operative skill, and unremitting care, leavened with a full measure of kindly sympathy, brought him a reputation which may be estimated by the frequency with which his colleagues and other members of the profession sought his advice for their relatives or themselves. Ever alive to surgical progress he weighed each new theory or practice in the scales of a cautious criticism based on wide experience, and adopted what he found good." As a teacher "his retentive memory, his grasp of any subject that he studied, and his extraordinarily clear and simple exposition, illustrated by clever draughtsmanship, smoothed away the difficulties of his students, impressed essentials on their memory, and conjured an ordered sequence out of unintelligible chaos." The draughtsmanship was associated with deep interest in many forms of art, while the gift of logic had been fostered by the continuing study of Latin and Greek literature.

Mr. Perrin married Dorothy, daughter of F. P. Rafferty, and she survives him with three children. His eldest son has lately gone to Cambridge.

ROBERT ARTHUR ASKINS, M.D. Dub., D.P.H.

WE regret to record the death of Dr. R. A. Askins which occurred on his return journey to South Africa to resume his appointment as principal medical officer to the Government of Southern Rhodesia. Dr. Askins was born at Clonmore Rectory, Co. Louth, was educated at King's School, Warwick, and studied medicine at Trinity College, Dublin, where he qualified in 1907 with first-class honours. After residence at Sir Patrick Dun's and the Children's Hospitals, Dublin, he entered the public health service as assistant medical officer for Merthyr Tydfil, and then for five years assistant school medical officer for the County of Lancaster. In 1914 the Bristol education committee made him its first full-time medical officer and for ten years—with a break as specialist sanitary officer, 1915–19, with the B.E.F.—he organised the school service in Bristol with such ability that in 1924 he was appointed deputy M.O.H. for the city and port, and in 1928 succeeded Dr. D. S. Davies in that capacity, retaining also the school medical work in his hands. One of his particular interests was children's vision, and he made an important report on the age-incidence of myopia in public elementary schools. He had already taken the D.P.H. Camb. and had been admitted to the bar, and his organising ability prepared the way for the wide changes in Bristol hospital management resulting from the Local Government Act of 1929. His resignation in May, 1930, on appointment to Rhodesia, caused much regret in Bristol where he was universally respected. Outside his official work Dr. Askins was of a shy and retiring disposition, fond of rural life, and spending his leisure in the hills of Somerset and Gloucester. He leaves a widow and two young children.

ROBERT NESBITT, L.R.C.P.I., J.P.

Dr. Nesbitt, who died at Sutton-in-Ashfield, Notts, on Nov. 26th, in his eightieth year, had practised for over half a century in the town. A native of Corglass, Co. Monaghan, he received his early education at Ballybay. A leaning towards medicine brought him as a lad of 17 to the old Ledwich school of medicine in Dublin, where at the age of 21 he took the L.R.C.S.I., L.K.Q.C.P.I., and L.M. After three years as house surgeon at Monaghan Infirmary in 1882 he married and settled at Sutton-in-Ashfield, where he remained all his life, although he retired from active practice in 1927. As M.O.H., district medical officer, public vaccinator, certifying factory surgeon, medical officer to the Post Office, railway companies, and collieries, and referee to several insurance companies he led a busy life. Nominated to the county bench in 1894 he was its chairman for some time. During the late war he presided over the local tribunal. He visited the U.S.A. on five occasions, partly to enlarge his family tree, and in 1930 he brought out privately a history of the Nesbitt family. Three years ago he celebrated his golden wedding. He leaves a widow, three daughters, and a son in the legal profession.

PUBLIC HEALTH

The Health of the School Child

THE annual report of the chief medical officer of the Board of Education is one of the most remarkable socio-medical products of our time. For twenty-seven years it has been signed by Sir George Newman; the report for the year 1934 which records work done under his direction and supervision is presented by Dr. Arthur MacNalty who is responsible for the report as a whole, although he states frankly in his introductory note that it is a composite document. It is in fact a series of monographs on various aspects of child life and of the relation of medical and social agencies thereto. An appendix to the report tells us who are the medical officers of the Board of Education who have contributed to it, although it does not enable us to associate the name with the chapter. The names are as follow: senior medical officer: Dr. J. Alison Glover; medical officers: Dr. Muriel Bywaters, Dr. A. H. Gale, Dr. J. E. A. Underwood, Dr. Robert Weaver, L.D.S., Dr. Ralph Williams (who is also chief examiner in hygiene), and Dr. Lilian Wilson. Dr. MacNalty calls special attention to the first two chapters on nutrition and physical training. It is, he remarks, important that full use should be made of the services of preventive medicine; otherwise zeal for either form of culture may outrun discretion. The tired brain of the child may be rested by diversion to more physical exercises and open-air recreation; but should the diversion be carried too far two body-systems may be overworked instead of one. Conversely the boy or girl who is overpressed in physical exercise or sport may suffer from exhaustion which reacts unfavourably upon mental capacity. Whatever form training may take it must be proportional to the age, sex, habits, circumstances, and state of health of the individual child or adolescent. In this important work, Dr. MacNalty concludes, the school medical officer should be able to render yeoman service.

In the chapter on nutrition it is said that whilst subnormal and bad nutrition (or malnutrition) are impossible to define precisely, yet it is not difficult for a medical officer of experience, tact, and common sense to make an assessment of a child's nutrition sufficiently accurate for practical purposes. In every collection of children however well-fed and circumstanced some, perhaps 4 per cent., will appear of subnormal nutrition. The fact that such children will always be found does not however invalidate the statement that the main factor in the production of subnormal nutrition in children is poverty. Poverty does not necessarily imply actual lack of food, but it is the root cause of nearly all the other factors which produce subnormal nutrition—overcrowding, lack of ventilation in sleeping quarters, lack of fresh air otherwise, poor school buildings, short hours of sleep, lack of cooking facilities, high incidence of and delayed convalescence from infectious disease. Poverty powerfully influences the quality of the diet, cutting down the proportion of the protective foodstuffs—e.g., milk, eggs, butter, vegetables (especially green vegetables), and meat. Even the strain of home-work is undoubtedly greater the poorer the home, and it may be a "poverty" factor in the older children. It is good to note that in last Monday's circular to local authorities the Board of Education makes it clear that extra meals may properly be provided free "for any child who shows any symptoms, whether educational or physical, however slight."

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 7TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2698; diphtheria, 1317; enteric fever, 29; acute pneumonia (primary or influenzal), 838; puerperal fever, 32; puerperal pyrexia, 95; cerebro-spinal fever, 24; acute poliomyelitis, 5; acute polio-encephalitis, 1; encephalitis lethargica, 8; continued fever, 1 (Chorley, Lancs); dysentery, 39; ophthalmia neonatorum, 66. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Dec. 13th was 3387, which included: Scarlet fever, 1157; diphtheria, 1281; measles, 147; whooping-cough, 303; puerperal fever, 22 mothers (plus 13 babies); encephalitis lethargica, 279; poliomyelitis, 6. At St. Margaret's Hospital there were 17 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 27 (1) from measles, 2 (0) from scarlet fever, 14 (0) from whooping-cough, 36 (5) from diphtheria, 50 (13) from diarrhœa and enteritis under two years, and 45 (5) from influenza. The figures in parentheses are those for London itself.

Manchester reported 10 deaths from measles, Liverpool 6, Blackburn and Preston each 2. Liverpool had 3 fatal cases of whooping-cough, Birmingham and Nottingham each 2. The deaths from diphtheria were reported from 24 great towns: 8 from Liverpool, 2 from Carlisle, not more than 1 from any other large town. The mortality from influenza is scattered over 31 great towns, Liverpool reporting 3.

The number of stillbirths notified during the week was 237 (corresponding to a rate of 39 per 1000 total births), including 32 in London.

VICTORIA CENTRAL HOSPITAL, WALLASEY.—Lord Moynihan has opened new twin operating theatres at this hospital. Other recent improvements include the extension of the X ray department and the enlargement of the male ward. In all, the expenditure has been about £18,000.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Voluntary Hospitals (Paying Patients) Bill

IN the House of Lords on Dec. 10th Lord LUKE moved the second reading of the Voluntary Hospitals (Paying Patients) Bill. The Bill received a second reading in the House of Commons last July, but there was no time, he said, for its passage through its later stages. In moving the second reading of the Bill now, he desired merely to clarify the considerations which animated those responsible for its introduction and to remove certain misconceptions.

The object of the Bill was to put all hospitals on a level so far as possible in their power to meet certain present-day needs. Voluntary hospitals with modern trust deeds had no legal hindrance to prevent them from providing for all classes who needed hospital treatment. Their primary function was to provide beds for the sick poor in the ordinary sense of the term. They often provided a comparatively small number of pay beds for the black-coated poor and the middle and professional classes, who were able to pay a moderate weekly charge, but could not afford what they would have to pay elsewhere. They sometimes also provided a still smaller number of beds for patients who needed treatment which, however well off they might be, those patients were often unable to obtain anywhere except at a hospital, and who were charged at rates appropriate to their means. The need of this new service resulted partly from the modern developments of later and expensive methods of diagnosis and treatment, and partly from recent economic changes which had produced what were called the New Poor. These new services had been provided in addition to and not in elimination of the maintenance and existence of the ordinary beds. In some hospitals the trust deeds were settled long ago when medical treatment was a very simple and inexpensive affair, and hospital accommodation was only needed by the very poor. The result was that at some hospitals these ancient trusts were so worded that the hospital could not legally provide for any patients other than the sick poor in the original sense of the term even with money specially collected or received for the purpose, and if the hospital had occasionally to treat any other patients because the treatments were unobtainable elsewhere, it had no legal power to charge them what they were able to pay. Nor could it provide special accommodation for them even if it did not do it at a profit. It was certainly hard on the older hospitals not to be able to provide these modern facilities which some other hospitals could provide. It was also hard on particular neighbourhoods not to be able to enjoy those modern facilities which other neighbourhoods could enjoy.

The object of the present Bill was to give the Charity Commissioners power in suitable cases to remove these anomalies by enabling such hospitals to provide pay beds as long as it was not done at the expense of or the detriment of the primary work which they were doing of providing for the sick poor. The Bill contained ample precautions against any risk that trusts for the direct benefit of the sick poor would be disregarded. In addition to the control given to the Charity Commissioners, there were special safeguards introduced in the Bill last session by the Government to ensure that funds and property acquired under the original trusts could not be diverted to any other purpose. In actual practice experience showed that the provision of pay beds benefited the whole community, including the sick poor themselves. The hospital with pay beds served patients who would otherwise be unable to obtain the latest treatment and who then became grateful supporters. Patients who could afford to pay could be charged what they could afford, and there was then an actual profit which helped the hospital to carry on its ordinary work. There could be no fear that anything in the Bill would enable hospitals to diminish their work for the sick poor, even if they wanted to do so. The safeguards in the Bill would prevent them from reducing their ordinary work, but the powers given by the Bill would assist them to increase it.

Viscount GAGE, speaking on behalf of the Government, said that when the Bill was first introduced the Government considered that, provided that certain precautions were put in with the object of maintaining the existing trusts, they could thoroughly support the measure. Those amendments to secure that the objects of the original trusts were maintained and the rights of the poorer patients were safeguarded, were agreed between the promoters and the Government and appeared in this Bill. In those circumstances the Government were fully in support of the Bill.

The Bill was read a second time.

Improvement of Health Services

In the House of Commons on Dec. 10th Sir KINGSLEY WOOD, Minister of Health, replying to the debate on the Address, said that the health proposals were very germane to the discussion, because their plans were of very little value unless they were able to build on the foundation of a healthy nation. It was for that reason that the Government had given prominence in their programme to the importance of social and public health services. Referring to the Government's proposed legislation for the improvement of the midwifery service, Sir Kingsley said there was urgent need of a sound midwifery service to ensure to every woman who required it skilled care in childbirth. A Bill was now being drafted and the Government hoped to introduce it early next year. In the interval he would consult with the appropriate associations, including representatives of the important voluntary associations who were engaged in this important work. There were very obvious gaps in the system of health insurance between the time that boys and girls left school and the time when they entered into insurable employment. There was also the difficulty in the present national health insurance and contributory pension scheme that many people at work on their own account were unable to enter into the insurance and pension system although their circumstances did not differ from other insured persons. The Government would introduce legislation to deal with these important matters.

HOUSE OF COMMONS

WEDNESDAY DEC. 11TH

Restriction of Medical Licences in Palestine

Mr. TOM SMITH asked the Secretary of State for the Colonies whether, in view of the protests of the Jewish agency against the restriction of medical licences in Palestine to persons who were naturalised and the fact that a number of Jewish doctors of German nationality were anxious to set up practice in Palestine, he would state the reason for the promulgation of the Ordinance restricting medical licences in this manner.—Mr. J. H. THOMAS replied: The Medical Practitioners (Amendment) Ordinance 1935, places no restriction on the number of licences to practise medicine which may be granted to Palestinian citizens by birth or persons who became Palestinian citizens or received permission to remain permanently in Palestine on or before Dec. 1st, 1935. The quota restriction imposed by the Ordinance affects only persons who became Palestinian citizens or received permission to remain permanently in Palestine after that date. Further, persons who will be employed solely in the practice of medicine in or on behalf of any recognised medical or scientific institution will be exempt from the quota. The reason for the enactment of this Ordinance

was that, in view of the great influx of medical practitioners in recent years, the profession was becoming overcrowded, a situation which had given rise to abuses, and had seriously affected the livelihood of established and reputable practitioners.

Colonel WEDGWOOD: Is the right hon. gentleman aware that the established recognised medical practitioners did not ask for this Ordinance, and that it affects merely the unfortunate refugees from Germany?

Mr. THOMAS: I am aware of the fact that there were a certain number of medical practitioners in Palestine, that owing to the unfortunate circumstances in Germany there was a large influx of others, and that those engaged in the medical profession asked for some protection for their position.

Medical Rejections of Air Force Recruits

Mr. POTTS asked the Under-Secretary of State for Air the number of persons who presented themselves for recruitment into the Royal Air Force for the year 1934 and the number rejected upon medical grounds or other causes.—Sir P. SASSOON replied: During the year ended March 31st, 1935, 16,389 definite applications for enlistment into the Royal Air Force were received: 7085 of these applicants were medically examined, 2786 were found medically fit and 2347 were attested.

THURSDAY, DEC. 12TH

Voluntary Hospitals in the Special Areas

Mr. STOREY asked the Minister of Labour whether the commissioner for the special areas was now prepared to make grants to the governing bodies of voluntary hospitals in the special areas towards the cost of the provision of new or the extension or alteration of existing hospitals or out-patient departments in the same way as he was prepared to make such grants to local authorities.—Mr. E. BROWN replied: Yes, Sir. The Commissioner is prepared to consider applications of this kind and to make grants on certain conditions.

Old Books and Infectious Disease in Schools

Mr. ANDERSON asked the President of the Board of Education how many school books under the control of the Cumberland Education Committee had been in constant use for one year, two years, three years, and over three years respectively; and whether his department had any particulars of the effect of the continuous use of old school books upon the spread of infectious diseases in schools.—Major DAVIES (Vice-Chamberlain of the Household) replied: My right hon. friend regrets that he has no information on the first part of the hon. Member's question. As regards the second part, while the continued use of old and soiled books in public elementary schools is to be deplored, my right hon. friend has no grounds for suspecting that infectious diseases have spread by that means.

Analgesia and Maternity

Sir ROBERT TASKER asked the Minister of Health if he was aware that a method of giving relief to women in their confinements known as gas-and-air analgesia had been in use for two years with unqualified success in the Liverpool Maternity Hospital and the Wellhouse Hospital, Barnet, and had now been adopted in a large number of hospitals throughout the country; and if he proposed to take any action to ensure that the use of gas-and-air analgesia would be encouraged in all hospitals under the control of the public health authorities.—Sir KINGSLEY WOOD replied: I am aware that the method mentioned by my hon. friend has been in use at the two hospitals referred to, and that favourable results are claimed for it. I understand also that an investigation of this and other methods is being carried out by the British College of Obstetricians and Gynæcologists, but no findings have yet been published. On my present information, I do not consider that I should be justified in taking any action in this matter, but the use of gas-and-air analgesia is within the discretion of the responsible medical officers of each hospital.

Rural Water-supplies

Sir CLIFFORD FOX asked the Minister of Health whether the full allocated subsidy of £1,000,000 for the improvement of rural water-supplies had now been definitely distributed; and, if so, could he state, by counties, the aggregate allocated to each one of them.—Sir KINGSLEY WOOD replied: £801,177 has been provisionally allocated to 53 counties.

Protective Respirators and Gas Attack

Mr. ACLAND asked the Home Secretary whether His Majesty's Government knew of any gas mask capable of giving to the wearer complete protection against any probable concentration of every poisonous gas which was known to the Government; and were such gas masks available to the public or likely, in the near future, to become available to the public, and in what numbers and at what prices.—Mr. G. LLOYD (Under-Secretary, Home Office) replied: The whole subject of the arrangements to be made for the provision of respirators has been under close examination for some time past. It is hoped that it will be possible to make a full statement on this subject in the near future.

Repair of Dilapidated Dwellings

Mr. DAY asked the Minister of Health whether he was aware that many houses throughout the country were becoming uninhabitable through the neglect of the owners to put them in reasonable repair; and if he would consider the introduction of legislation compelling owners of house property to spend in repairs the percentage of rents they were allowed to charge.—Sir KINGSLEY WOOD replied: The Rent Restrictions Acts contain provisions enabling a tenant to withhold so much of his rent as represents the permitted increase if his premises are not in a reasonable state of repair, and in these circumstances I do not consider that further legislation is necessary.

Post-Vaccinal Encephalitis

Mr. BROAD asked the Minister of Health what steps were adopted with a view to bringing cases of post-vaccinal encephalitis under the notice of his department.—Sir KINGSLEY WOOD replied: Notices are published in the medical press requesting medical practitioners to notify my Department of all cases of post-vaccinal encephalitis. Information is also obtained from the returns made by public vaccinators, and by the examination of all death certificates on which any reference is made to vaccination.

MEDICO-LEGAL SOCIETY: ANNUAL DINNER.—The annual dinner of this society was held on Dec. 13th at the Holborn Restaurant, when the president, Mr. C. Ainsworth Mitchell took the chair. Sir William Willcox, submitting the toast of "Medicine and Law," said it was increasingly desirable that the medical and legal professions should be drawn closer together, in view of the part psychology was now playing in the administration of justice, and the growing tendency to attribute wrong-doing, particularly in the juvenile delinquent, to some failure in the working of the mind. Lord Dawson, responding, said the need of both lawyer and doctor was to understand human nature. The ambit of medical thought having been extended to include the operations of the mind, the medical profession was now concerned with conduct. The linkage between body and mind was to be found in the internal glands; a slight increase in the thyroid secretion, or a slight decrease in the sex hormone might produce a change in conduct so notable as seriously to influence the doctrine of responsibility. He was in favour of the appointment of medical assessors to assist the judge in difficult cases. Mr. Claud Mullins, who also responded, declared himself as a law reformer, but a hopeless one at that, because the law seemed to be busy about everything except reforming itself. He regretted that in the higher courts there was no time between conviction and sentence for enlisting the help of medicine and psychology. "The Society" was proposed by Sir Edward Tindal Atkinson and acknowledged by the president, who said the society had now nearly 400 members. "The Guests" were toasted by Mr. E. R. Bolton; Mr. John Evans, president of the Society of Public Analysts, and Dr. Robert Hutchison responded.

MEDICAL NEWS

University of Oxford

On Dec. 14th the following degrees were conferred :—

B.M.—P. E. Cresswell, R. N. B. Cridland, H. N. Davis, H. Fidler, B. B. Hickey, E. C. O. Jewesbury, W. P. Mallinson, and F. G. Ward.

Royal College of Surgeons of England

A meeting of the council was held on Dec. 12th with Mr. Arthur Burgess, senior vice-president, in the chair. Mr. E. C. Hughes, Mr. L. E. C. Norbury, Mr. Robert Milne, and Mr. P. H. Mitchiner were elected to the court of examiners, and Sir Holburt Waring was reappointed representative on the court of governors of the University of Birmingham.

It was reported that Sir Cuthbert Wallace, the president, has been appointed a member of the general council of King Edward's Hospital Fund for London for next year.

Diplomas of fellowship were granted to the following candidates :—

Doris E. O'Doherty, M.B. Lond., M. N. Chatterjee, L.R.C.P., E. W. T. Morris, L.R.C.P., W. S. Creer, M.B. Liverp., J. K. Willson-Pepper, M.B. Camb., I. W. Matheson, L.R.C.P., Dorothy A. Sharpe, M.B. Lond., D. K. Mulvany, M.R.C.P. Lond., P. G. Scott, L.R.C.P., H. G. Arthure, M.B. Lond., P. B. Moroney, M.B. Liverp., K. J. Gilchrist, M.B. Lond., O. S. Tubbs, M.B. Camb., S. E. Birdsall, L.R.C.P. Lond., C. H. Gray, M.B. Manch., R. F. Winckworth, M.B. Lond., Philip Baron, M.B. Cape Town, Doris B. Brown, M.B. Leeds, R. V. Payne, M.B. Camb., V. C. Snell, M.B. Lond., T. M. Tyrrell, M.B. Camb., W. R. Hutchinson, L.R.C.P., S. G. Browne, M.R.C.P. Lond., J. F. Jarvis, M.R.C.P. Lond., L. C. Oliver, L.R.C.P., A. K. Price, M.B. Lond., P. P. Sheth, M.B. Bombay, John Grocott, M.B. Lond., R. H. R. Belsey, M.B. Lond., L. E. Jones, M.B. Lond., V. P. Gupta, M.B. Lucknow, Ibrahim Magdi, M.B. Cairo, B. H. Page, L.R.C.P. Lond., H. S. Shucksmith, M.B. Leeds, F. F. Rundle, M.B. Sydney, Garthowen Williams, L.R.C.P., M. A. Falconer, M.B. N.Z., A. S. Kerr, M.B. Liverp., Thomas Beath, M.D. Toronto, J. I. M. Black, M.B. Durh., A. N. de Quadros, M.B. Bombay, W. S. Diggle, M.B. Liverp., H. T. Fleming, M.B. Dub., S. R. Gerstman, M.B. Melb., L. W. Gleadell, M.B. Melb., A. O. Green, M.D. Melb., Muriel B. McIlrath, M.B. Sydney, Ismail Mehrez, M.B. Cairo, E. W. Peet, M.B. Durh., M. Z. Siddiqui, M.B. Bombay, J. B. Somerset, M.D. Melb., and H. K. Vernon, M.B. Durh.

A diploma of membership was granted to Dorothy J. Thompson.

Licences in dental surgery were granted to the following candidates :—

D. E. Ashdown, L. C. Bellsham-Revell, Elizabeth C. Boss, A. P. Britton, John Carnaghan, G. K. Catchpole, Marjorie L. Close, C. E. Coltman, J. O'C. Daniels, J. L. Deuchar, Morris Dobkin, G. R. Down, Edward Dunstan, Ronald Edwards, Montgomery Featherman, A. C. Fraser, Peter Griffin, R. G. Gwynne, E. C. Hammond, N. A. Hawkins, C. E. Henn, R. O. Holland, D. A. Ibbetson, G. E. Jackson, J. G. Jones, J. C. Keay, S. B. Kendall, R. G. Kett, J. C. Lawson, D. W. Macfarlane, M. M. Maclaire-Hillier, E. L. Moll, J. E. C. Peacock, F. H. W. Peatfield, P. V. Peatfield, R. A. Pepper, R. S. Pook, R. P. Powell, E. C. Redfern, H. P. L. Rhodes, Howell Richards, J. B. Rodway, J. E. Rydemark, Kenneth Sharp, N. A. Siggers, R. G. Simpson, T. A. Smitham, J. F. A. Smyth, P. W. Stanley, C. A. Styer, Alfred Tarttelin, H. B. Thornton, A. F. Townend, P. A. Trotter, G. L. R. Welch, R. S. Wells, R. M. H. Williams, W. E. Wright, and Malcolm Wykes.

Diplomas in anæsthetics were granted jointly with the Royal College of Physicians to the following candidates :—

H. K. Ashworth, J. H. Attwood, Arnold Barnsley, C. A. Borland, Lorna Bray, H. J. Brennan, R. J. B. Broad, A. I. P. Brown, F. F. Cartwright, T. H. Chadwick, D. J. Davies, Winifred Dean, H. G. Dodd, N. A. Gillespie, John Gillies, A. P. Gorham, R. B. Gould, H. F. Griffiths, Gwendolen Harrison, Gerald Hochschild, Mary J. Hudson, Ronald Jarman, E. F. Johnson, Alison R. Kerridge, L. H. Lerman, Antony Lucas, W. S. McConnell, Jean S. B. McNeil, S. V. Marshall, E. A. Marson, A. G. Miller, J. C. Nicholson, M. D. Nosworthy, E. A. E. Palmer, Brian Ralt-Smith, E. H. Rink, F. W. Roberts, K. MacD. Ross, Doris M. Sanders, J. D. Scott, E. V. Slaughter, C. E. Sykes, Sheina C. H. Watters, J. H. West, Rose E. Williams, and F. C. Wright.

University of Sheffield

At a meeting of the university council held on Dec. 13th the resignation by Dr. Harold Leader of his post of lecturer in diseases of children was announced.

Faculty of Medicine.—Dr. J. W. McNee was appointed examiner in therapeutics and Prof. Daniel Dougal in obstetrics and gynæcology.

It was reported that the Rockefeller Foundation, New York, had made a grant of £200 in aid of research in the department of pharmacology.

University of London

At recent examinations the following candidates were successful :—

THIRD EXAMINATION FOR M.B., B.S.

S. O. Aylett, King's Coll. Hosp.; Joan W. Ellinger and Mary F. Lockett, Royal Free Hosp. (with honours); R. M. H. Anning, St. Mary's Hosp.; C. G. Baker, Guy's Hosp.; T. L. S. Baynes, St. Bart.'s Hosp.; E. R. Bennion, Westminster Hosp.; Katherine M. Blenkin, Royal Free Hosp.; C. J. F. Blumenthal, Guy's Hosp.; P. R. Boucher, St. Mary's Hosp.; Muriel G. Boycott, Univ. Coll. Hosp.; P. E. G. Clements, St. Bart.'s Hosp.; J. G. Clothier, King's Coll. Hosp.; J. H. Cobb, Univ. Coll. Hosp.; E. C. Cordeaux, Middlesex Hosp.; Robert Cox, Westminster Hosp.; J. V. Dacie, King's Coll. Hosp.; D. V. Davies, Univ. Coll. Hosp.; D. G. ff. Edward, St. Bart.'s Hosp.; J. A. C. Franklin, St. Thomas's Hosp.; L. D. B. Frost, St. Bart.'s Hosp.; B. M. Goldsworthy, St. Thomas's Hosp.; K. L. Grogono, London Hosp.; E. A. Hardy, Westminster Hosp.; K. W. Hardy, London Hosp.; D. B. Hyslop, Charing Cross Hosp.; J. D. Jenkins, Middlesex Hosp.; H. S. Joseph, St. Bart.'s Hosp.; Charles Langmaid, Univ. Coll., Cardiff; K. A. Latter, St. Bart.'s Hosp.; J. I. Lesh, St. Thomas's Hosp.; J. L. Lewis, London Hosp.; M. J. Lindsey, Guy's Hosp.; H. M. McGladdery, St. Bart.'s Hosp.; W. N. Mann, Guy's Hosp.; J. I. C. Mason, St. Bart.'s Hosp.; W. R. Merrington, Univ. Coll. Hosp.; Tudor Miles and R. L. Moody, St. Thomas's Hosp.; C. J. B. Murray, Middlesex Hosp.; Howard Nicholson, Univ. Coll. Hosp.; W. L. Ogle, Guy's Hosp.; C. J. S. O'Malley and D. A. O'Reilly, St. Thomas's Hosp.; G. H. C. Ovens, St. Mary's Hosp.; W. D. Park, St. Bart.'s Hosp.; F. D. Paterson, St. Mary's Hosp.; Eric Pereira, St. George's Hosp.; H. N. Perkins, St. Mary's Hosp.; J. B. Phillips, Univ. Coll., Cardiff; F. O. Potter, Guy's Hosp.; W. A. Pritchard, Univ. Coll. Hosp.; J. D. Richardson, King's Coll. Hosp.; Jean Ross, Univ. Coll. Hosp.; Millicent I. Rowland, Royal Free Hosp.; P. N. Shutte, St. Thomas's Hosp.; Isidore Slome, London Hosp.; B. W. Smith, Guy's Hosp.; J. G. Stewart, Westminster Hosp.; J. M. Stewart, St. Bart.'s Hosp.; Margaret J. Suttill, Royal Free Hosp.; J. W. Todd and B. McN. Truscott, Middlesex Hosp.; C. E. G. Wickham, St. Thomas's Hosp.; Helen E. Wight and Sheila M. R. Williams, Royal Free Hosp.; J. W. Wishart, Victoria Univ. of Manchester; A. L. Wyman, Univ. Coll. Hosp.; and E. C. Zorab, Guy's Hosp.

The following candidates have passed in one of the two groups of subjects :—

Group I.—G. T. Balean, H. L. W. Beach, L. C. Bousfield, F. E. Corea, A. G. Edwards, G. J. Evans, J. E. Giesen, W. H. Hamilton, D. T. K. Harris, Sylvia A. M. Herford, H. G. Howitt, L. M. Kelly, E. A. Knappett, H. A. Leggett, O. G. Lloyd, Queenie I. E. May, Elizabeth M. Morgan, F. J. Napier, S. G. Nardell, R. J. Niven, E. P. Rigby, R. S. F. Schilling, G. R. Taylor, W. R. Welply, and Rowena Woolf.

Group II.—Charles Anderson, F. W. Baskerville, H. V. Brown, Kathleen E. Burnell, H. B. C. Carter-Locke, Thomas Denness, J. E. Elliott, W. D. F. Lytle, J. McA. McArthur, E. G. Murphy, N. W. N. Murray, K. L. G. Nobbs, Dorothy S. Pope, D. A. Prothero, J. C. Roberts, E. ap I. Rosser, H. C. Thomas, Winifred J. Wadge, Alan Wardale, and E. D. H. Williams.

Aaron Meyer has passed in Part I. of the examination for the diploma in medical radiology.

University of Bristol

At recent examinations the following candidates were successful :—

FINAL EXAMINATION FOR M.B., CH.B.

V. T. Baxter, Theodora M. Crabtree, J. G. Field, Irene G. Hamilton, and M. A. Nicholson.

University of Manchester

Mr. V. F. Lambert, hon. laryngologist to the Manchester Hospital for Diseases of the Chest and Throat, has been appointed lecturer in diseases of the ear.

At recent examinations the following candidates were successful :—

FINAL EXAMINATION FOR M.B., CH.B.

Part II.—Jack Cohen, F. P. Ellis, William Fielding, G. D. Harthan, Henry Hempling, Ralph Mallinson, Annie Nelstrop, H. D. B. North, C. S. Parker, J. N. Shepherd, Bernard Thornley, and J. R. Wardley.

Part I.—Cyril Berens, Hélène E. K. Booth, Hilda Brice, A. H. Gregson, G. M. Komrower, W. H. Purves, and M. B. D. Welland.

Royal Institution

The subject of this year's Christmas lectures for young people is photography, and they will be given by Mr. C. E. K. Mees, D.Sc., on Dec. 28th, 31st, Jan. 2nd, 4th, 7th, and 9th, at 3 P.M. The address of the Royal Institution is 21, Albemarle-street, London, W.1.

Dr. A. G. B. Smart, senior medical officer of the Island of St. Vincent, has been appointed an official member of the executive council of the island.

Port Talbot Hospital

On Dec. 6th Lady Pollington opened the new administrative block of the Port Talbot and District Hospital, which is linked by a corridor to the main building. It includes a large sitting-room and a lecture-room for nurses.

Dairy and Ice Cream Exhibition

The sixth National Dairy and Ice Cream Convention will be held at the Crystal Palace from Jan. 28th to 31st, 1936.

St. John's Hospital for Diseases of the Skin

The out-patient department of this hospital is moving from 49, Leicester-square to larger premises at 5, Lisle-street, W.C. The new premises will be open to patients on Jan. 1st.

A Museum of Toys

The Institute of Medical Psychology, Malet-place, London, is making a permanent collection of toys from all the races of the world. Such a museum, it is thought, will be of value to the psychologist and anthropologist in tracing the early phases of social development. The Institute is receiving assistance from the Educational Branch of the Colonial Office, whose teachers in remote parts of the world select suitable exhibits from their particular area. Members of the public who can in any way help in the formation of the collection are invited to communicate with the secretary of the Institute. The toys most needed are those with an essentially national character, particularly English toys of individual non-mass-production type.

Epsom College

The 58th annual meeting of the Old Epsomian Club was held on Dec. 12th at the Hotel Great Central, with Mr. J. Norman Eggar (O.E. 1902) in the chair. Ninety-five other Old Epsomians were present, including six honorary members, and among the guests were Lord Leverhulme, president of the College, Dr. John Fawcett, treasurer, Dr. Henry Robinson, vice-chairman of the Council, Dr. H. R. D. Spitta, chairman of the executive committee, and Dr. J. A. Drake, dean of King's College Hospital medical school. As befitted the occasion, the toast list was short and the speeches brief and to the point. Sir Cosmo Parkinson proposed the health of the chairman, who, in reply, told all about cricket matches before himself proposing the toast of the evening, "Floreat Epsomia," coupled with the name of the headmaster, Rev. A. C. Powell, whom he consoled with a remark that he knew what little devils boys could be but parents could be an even greater trial. Mr. Powell spoke of two knighthoods conferred on Old Epsomians—Cosmo Parkinson (O.E. 1906) and A. J. Suenson-Taylor (O.E. 1912)—and of an even closer association between Old Epsomians and the present school by setting apart the second Saturday in July as an Old Boys' Day. Dr. Daniel Twining (O.E. 1903) proposed "The Guests" with great ingenuity, and three of them replied, Mr. John Niven, chairman of the Baltic, Dr. Fawcett, who said he had never heard so many apocryphal stories in one evening before, and Dr. Drake, who said there had never been so many openings for young doctors as there were now.

Vacancies

For further information refer to the advertisement columns

Army Dental Corps.—Commissions.
Banbury, Horton General Hospital.—Res. M.O. At rate of £150.
Bath, Royal United Hospital.—H.P. At rate of £150.
Bournemouth, Royal National Sanatorium for Consumption, &c.—Asst. Res. M.O. £200.
Cambridge, Addenbrooke's Hospital.—H.S. At rate of £130.
Canterbury, Kent and Canterbury Hospital.—Two H.S.'s Each at rate of £125.
Connaught Hospital, Walthamstow, E.—Cas. O. £100.
Crichton Royal, Dumfries.—Res. third Asst. Phys. £350–£500.
Dorchester, Dorset County Hospital.—H.S. At rate of £160.
Dover Royal Victoria Hospital.—Res. M.O. £180.
Durham, County Council, Education Dept.—Asst. School. M.O. £500.
Eastbourne, Princess Alice Memorial.—Two Hon. Surgeons. Also Res. H.S. £150.
Eastbourne, Royal Eye Hospital, Pevensey-road.—H.S. £100.
Exminster, Devon Mental Hospital.—Jun. Asst. M.O. and Pathologist. £350.
Glamorgan County Mental Hospital, Bridgend.—Jun. Asst. M.O. £350.
Great Yarmouth General Hospital.—H.S. £140.
Hammersmith Metropolitan Borough.—Two Asst. M.O.'s. Each £500.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. At rate of £50.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. At rate of £100.
Hull Royal Infirmary.—Res. Surg. O. £200.
Ilford, West Ham Mental Hospital, Goodmayes.—Jun. Asst. M.O. £350.
Kent and Canterbury Hospital.—Hon. Dermatologist.
Leeds Public Dispensary and Hospital.—Hon. Anæsthetist. Also Hon. Clin. Assts.
Leicester City General Hospital.—Jun. Asst. M.O. £300.
Liverpool Royal Children's Hospital, Myrtle-street.—Two Registrars and Tutors. Each at rate of £50.
London University.—Readership in Surgery. £800–£1000.
Manchester, Ancoats Hospital.—Res. Surg. O. £200. Also Med. Reg. £50.
Manchester Royal Children's Hospital, Pendlebury.—Res. M.O. At rate of £125.
Manchester, Withington Hospital and Institution, &c.—Jun. Asst. M.O.'s. Each at rate of £200.
Maudsley Hospital, Denmark Hill, S.E.—Research Fellowship in Psychiatry. £300.
Middlesex County Council.—Tuber. M.O. £750.
Miller General Hospital, Greenwich-road, S.E.—Hon. Dental Surgeon.
Newcastle-upon-Tyne Royal Victoria Infirmary.—Asst. to National Radium Centre. £250.
Rochdale Infirmary and Dispensary.—Sen. H.S. £250.
Royal Waterloo Hospital for Women and Children, Waterloo-road, S.E.—Hon. Clin. Asst. for Ophth. Dept.
St. John's Hospital, Lewisham, S.E.—Clin. Asst. to M.O. in Elec. and Massage Dept.
St. Mary's Hospital Institute of Pathology and Research, W.—Research Studentship. At rate of £200.
St. Thomas's Hospital, S.E.—Obstetrician and Gynæcologist.
Salford Royal Hospital.—Orthopædic Reg. £100.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—Radiologist.
Sheffield, Jessop Hospital for Women.—Sen. Res. O. Also two H.S.'s. At rate of £150 and £100 respectively.
Shoreham-by-Sea, Southlands Hospital.—Jun. Asst. Res. M.O. £250.
Southampton Borough General Hospital.—Jun. Res. M.O. £200.
Stirling District Mental Hospital, Larbert.—Third Asst. M.O. £250.
Sunderland Children's Hospital.—H.S. £120.
Westminster Hospital, Broad Sanctuary, S.W.—Three Surg. Regs. Each £250.
West Sussex County Council.—Asst. Tub. O. and Asst. M.O. £750.
Wolverhampton Education Committee.—Asst. M.O. £600.

Births, Marriages, and Deaths

BIRTHS

KINGSTON.—On Dec. 15th, at Leeds, to the wife of Frank E. Kingston, M.B.—a son.
PATERSON.—On Dec. 13th, the wife of Arthur Spencer Paterson, M.D., M.R.C.P., of Hildenborough, Kent, of a daughter.

MARRIAGES

ALEXANDER—MACKINNON.—On Dec. 12th, at St. Mark's, North Audley-street, Paul Creighton Alexander, B.M., B.Ch. Oxon., of Byfleet, Surrey, to Helen Oswald, only child of Mr. Alpin D. Mackinnon of Limpsfield, Surrey.
KAUNTZE—MOODIE.—On Dec. 10th, at St. Paul's, Knightsbridge, Dr. Ralph Kauntze, to Katherine Margaret (Peggie), daughter of Mr. Ramsay Moodie of Guildford.
MITCHELL—NICOLSON.—On Dec. 11th, at St. Raphael's, Surbiton, Thomas Carlyle Mitchell, M.D., to Betty Baber Nicolson.
ROBB—SEABROOK.—On Nov. 6th, George Douglas Robb, M.D.(N.Z.), F.R.C.S. Eng., 41, Symonds-street, Auckland, N.Z., to Helen, third daughter of Mr. A. D. and the late Mrs. Seabrook of Auckland.
THURSTON—BARBER.—On Dec. 14th, 1935, Gavin Thurston, M.R.C.S., L.R.C.P., to Ione, only daughter of J. T. Barber, Esq., J.P., at St. Paul's, Winchmore Hill.

DEATHS

AITKEN.—On Dec. 8th, suddenly, at Lagos, Nigeria, Andrew Blair Aitken, M.B. Glasg., F.R.C.S. Eng., Consulting Surgeon to Nigerian Medical Service.
CROSS.—On Dec. 6th, at Oxford, David Kerr-Cross, M.B. Glasg., late of Glasgow, Nyasaland, and Natal, aged 78.
HERN.—On Dec. 11th, at his brother's residence, Beaconsfield, George Hern, M.R.C.S. Eng., L.D.S.
OWEN.—On Dec. 10th, at the Royal Infirmary, Liverpool, Albert Harold Owen, B.A. Camb., M.R.C.S. Eng., of Llanfairfechan, late Director of Medical and Sanitary Services, Tanganyika, aged 55.
ROXBURGH.—On Dec. 12th, at Seymour-street, W., David Roxburgh, M.B. Glasg., aged 74.
SOMERS.—On Dec. 5th, 1935, at The Grange, West Bromwich, Noble Luke Usher Somers, L.R.C.S.I., aged 73.
WOOD.—On Dec. 11th, at Manor House, Nuneaton, Alfred Arthur Wood, M.D. Liverp., aged 62.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

EDWARD ATSLOWE, M.D.

By R. R. JAMES

THE surname Atslowe is uncommon. In Marshall's "Genealogist's Guide" the only entry at all resembling it is "Attslow," with a reference to Morant's "History of Essex." On consulting Morant (vol. i., p. 205), I find: "Henry Attslow, gent., son and heir of Edward Attslow, M.D.," as dying May 26th, 1622, possessed of the manor and advowson of Downham. Kirby, in "Winchester Scholars," gives two Atslows: Ambrose and Edward; he also gives a Luke Atslowe, who as a matter of fact was the younger brother of Edward.

Mr. Herbert Chitty, Bursar of Winchester College, has enabled me to give the entries from the original register of scholars which Kirby used when compiling his Roll. They are:

1547. Edwardus Atslowe de Eversholde, Lincolniensis Diocesis XI annorum in festo Michaelis preterito. A marginal note gives: rec. Oxon.*

1549. Lucas Atslooe, de Eversholte comitatu Bedforde IX annorum in festo Natalis Domini preterito. Lincolniensis (Diocesis). A marginal note gives: rec. Oxon. artium magister.

1589. Ambrosius Atslow, Sancti Oliveri (sic) London. 10 annorum. I, Maii preterito. London (Diocesis).

Kirby gives the following note under Edward's name: "Scholar New Coll. M.D. Fell. 1553–62. Removed by Queen's Commissioner." Luke appears to have been removed in 1568 because he had refused to take Holy Orders within the time laid down by the College Statutes. Foster ("Alum. Oxon.") gives Edward's degrees as follows: B.A., 1555. M.A., 1559. B.Med., 1564. D.Med., 1566. Munk ("Roll of the Royal College of Physicians") states that Edward Atslowe was "on the 22nd August, 1554, actually created doctor of physic, in the house of Dr. Henry Baylie, situated in the High Street, leading to the Quadrivium, by Dr. Thomas Francis and him, the said Dr. Henry Baylie, by virtue of a commission directed to them by the Venerable Convocation." Atslowe was one of four men (three of them physicians) specially appointed by Convocation to dispute before Queen Elizabeth when she came to be entertained at the University in the early part of September of that year.

Dr. Atslowe was elected a Fellow of the Royal College of Physicians between 1565 and 1569. The exact date is uncertain as the records are defective for those years. He was appointed censor in 1569 for three years, and was named elect in 1572 and consiliarius in 1572 and 1583. On Nov. 2nd, 1573, he was married, at Stoke Newington, to Frances Wingfield. He was dead by May 28th, 1594, when his place as elect was filled by a much more distinguished Wykehamist, Dr. Christopher Johnson, the ex-headmaster of Winchester, well known as a poet.

Atslowe was an ardent Catholic and partisan of Mary, Queen of Scots. He was twice imprisoned (in 1579 and 1585 according to the "Dictionary of National Biography") for having taken part in designs for her escape; and in a letter from Thomas Morgan to the Queen of Scots we read: "I hear that Dr. Atslow was racked twice, almost to death, in the Tower, about the Earl of Arundell his matters, and intention to depart England." Munk, from whom this is taken, says that the Earl, who died in 1595, settled an annuity on the doctor's widow.

In the "Calendar of State Papers (Domestic) Eliz." (vol. cxxxi.) occurs: 1579. June 15. Examn. of Thos. Assheley taken before Eustace Clovill esq., J.P., Essex, touching certain evidences conveyed away by Mrs. Field from Dr. Atslowe's house after his apprehension.

Dr. Atslowe died intestate. Administration of his estate was granted on May 6th, 1594, to his widow, Frances. In the margin of the record is noted, "Parochie Sancti Olavi Silverstrete." This admon was granted in the probate court of the archdeacon of London (A.B., 2.148). In the third volume, p. 19, we get the compotus of the goods of Dr. Atslowe on May 12th, 1595. Here he is given as of St. Olave, Hart-street. The estate seems to have been worth £561 16*s.* 2*d.*

Frances Atslowe died towards the end of the year 1605. I am indebted to Mr. Herbert Chitty for the notes of her will, which follow:

Fraunces Atsloe of Downeham, Essex, widow. Dated 25 Aug., 1605: proved 3 Dec., following. (P.C.C. Hayes, 89.) She desires to be buried in the parish church of Clerkenwell, near London, next to the grave where her husband was buried. She mentions her daughters Anne and Mary Atsloe; her eldest son, Henry Atsloe, her daughter Frauncis, wife of Sir Edward Frauncis, of Petworth, Sussex, Knt., and their daughter Bridget, her grandchild; her son Edward Atsloe and her son, Ambrose Atsloe, to whom she bequeathes her lease in London which she held of New College, Oxford; and her grandchild, Edward,† son of her son, Henry.

She appointed as her executors her "deare frende Mr. Doctor Oxenbridge"‡ and her son-in-law Sir Edward Frauncis. The latter proved the will.

Henry's son Edward was admitted pensioner (aged 15) at Peterhouse in 1616. He was admitted at Gray's Inn in 1618–19, and was later of Downham.

I am greatly indebted to Mr. Chitty for his generous help, and I owe to Mr. Harvey Bloom the notes on the admon of Dr. Edward.

* "Rec. Oxon." usually implies that the scholar left Winchester for Oxford to become a scholar of New College.

† The death of Henry Atslowe has been recorded at the beginning of this paper. His son Edward inherited Downham and was 21 years of age at his father's death. He must have died young, for Henry's daughter, Helen, inherited Downham and carried it in marriage to Sir Wm. Andrew, Bt., whose son, Sir Francis, sold the estate in 1698. (Morant's "Essex.")

‡ Daniel Oxenbridge. See Munk's "Roll," vol. i., p. 193.

POSSIBLE CHRISTMAS PRESENTS

Mr. H. A. Reason's ROAD TO MODERN SCIENCE [1] starts in ancient Egypt and takes us down to our own times. It is largely biographical and the reader learns about astronomy, for example, by learning about Copernicus and his successors. The contribution made to science by many different people is briefly described and we are reminded of what familiar names stand for. More than that, we are reminded of elementary principles on which the modern world is founded. While the book could be read by any well-educated person, it is particularly suited to the needs of those who have been trained in science but find it hard to explain exactly how an internal combustion engine or a barometer works. A good account is given of "waves of many kinds," but it is necessarily brief and can serve only as an introduction to such books as Prof. Andrade's brilliantly simple account of the structure of matter and radiation issued by the same publishers a few years ago.[2] Mr. Reason's survey is nevertheless a remarkable essay in condensation, and he is always interesting. He is shaky on the principles of immunisation (p. 243) and we do not agree that wireless waves have no effect on the human body, that Lord Lister was a Scotsman, or (unfortunately) that "to-day almost every disease, if taken in time, can be cured." But his book should appeal to many a medical man or serious-minded boy.

From the history of science we turn to the science of history, as exemplified by the reconstruction of

[1] The Road to Modern Science. By H. A. Reason, B.Sc. London: G. Bell and Sons Ltd. 1935. Pp. 306. 6*s.*

[2] The Mechanism of Nature. By Prof. E. N. C. da Andrade, D.Sc. London. 1930.

JOAN OF ARC [3] from a confusing mass of documents and legend. Those who have read Dr. C. McLaurin's study of Joan in "Post Mortem" will find that Mr. Milton Waldman makes her personality seem less pathological and therefore perhaps more interesting. The voices and visions, he holds, must be considered in relation to the intense religious atmosphere of the period, and he believes that "by every familiar test, medical and historical, she was a healthy and rational person." Nor does he dismiss her, as others have done, as a mere mascot with the French armies: on the contrary, her disrespect for the fatuous military conventions of the period made her intrinsically valuable. Mr. Waldman is a historian, not a writer of romances; but his vivid narrative leaves an impression of great heroism in the young girl's final struggle to win justice or mercy from the theologians of her church. "An English lord present as a spectator exclaimed after one of her answers. 'There's a fine woman: what a pity she isn't English.' It was the highest, the immemorial tribute of his race. . . ."

Waldman regards Joan of Arc as essentially a French peasant: William Cobbett considered himself a typical English one. In PETER PORCUPINE [4] Marjorie Bowen describes the astonishing life of this ploughboy, sergeant-major, bookseller, pamphleteer, publisher, editor, historian, reformer, and agricultural innovator. Cobbett entered public life as a literary thorn in the side of the radicals: he ended it as a diehard opponent of the Industrial Revolution and the City, a champion of the People, and the collaborator with Wakley of THE LANCET in a House of Commons resolution of protest against the iniquities of the new poor-law. Miss Bowen's book shows how badly the People needed champions in the early decades of last century, and Cobbett with his tireless and ruthless invective takes his pace in the history of reform. But if he was the typical Englishman it is not surprising that English honesty should sometimes be suspect. The sworn foe of every kind of public corruption and jobbery, he found nothing shocking in his own repeated bankruptcies or his failure to repay his friends. The advocate of mercy, he approved of bull-baiting; the persistent exponent of good sense, he never seemed to bother about other people's points of view. The brutal pamphleteer was also the author of "Rural Rides." Miss Bowen does her best to get consistency into the portrait, but her sympathetic intentions sometimes break down in face of the man's eternal self-satisfaction. This, and his vitality, and his amiable wife, were presumably the cause of his almost unquenchable happiness.

CALCULUS OF THE SUBMAXILLARY GLAND

THE forming of a calculus in the submaxillary gland may be quite unsuspected. Grandclaude and Driessens (Echo méd. du Nord., 1935, iii., 651) divide its clinical course into three phases: the period of latency; the period of manifestation, in which the calculus produces pain or functional disorders such as acute salivary retention; and a period of complications. The glandular substance reacts to the presence of the stone by sclerosis and inflammatory change. Abscess-formation is common, but even without it chronic or subacute inflammation leading to generalised sclerosis seems to be an almost inevitable outcome. This commonly affects all parts of the gland, and so far destroys its secretory tissue as to make it functionally inactive; also it may make it so hard as to be mistakeable for a tumour or even for an osseous lesion of the jaw. Grandclaude and Driessens conclude from their histological investigations that complete extirpation of the gland is fully justified, and they think that too much care need not be taken to save it in operations for calculus. But the dense adhesions outside the gland proper may make excision very difficult. The site of operation is always infected, and should be drained.

In the production of the calculus, Grandclaude and Driessens think that infection plays the greatest part; other suggested factors include high concentration of mineral salts in the secretion, the sinuosity of Wharton's duct, an abnormal reaction of the tissue fluids of the gland, and the presence of a true foreign body. They have found amorphous debris within the lumen of the small ducts, either forming a plug, or attached, apparently, to the wall. The plug is formed of protein material, with a nucleus of epithelial debris, of blood-cells, and of micro-organisms: from its staining reactions the substance appears to be undergoing calcification. By the side of a macroscopic calculus they have demonstrated a true microscopic stone, with calcareous granules at its core. Calcium phosphate is the main mineral deposit found in these calculi, with traces of calcium carbonate. The change in the gland, at any rate, does not seem to be localised to the site of a stone, but to be generalised. The organisms appear to gain entrance along Wharton's duct, and first to give rise to a pericanalicular inflammatory reaction.

The early and less conspicuous symptoms of calculus are slight intermittent pain, discomfort in movements involving the floor of the mouth, and slight trismus. "Salivary colic," acute salivary retention, and hernia of the salivary gland are more unmistakeable signs which come later. Abscess-formation may lead to fistula into the mouth or through the skin, and Ludwig's angina may follow the extraglandular spread of the process.

ABORTION

THREE essays on abortion [1] provide an interesting demonstration of how by skilful handling the same facts may be used to plead diametrically opposite cases. Of the authors, Miss Browne is in favour of the unrestricted legalisation of abortion based on the Russian plan, Mr. Ludovici condemns abortion wholesale, while Dr. Harry Roberts steers a middle course and considers that it should be legalised in certain circumstances. It is significant that in the opinion of the first author the decision for or against abortion should ultimately rest with the woman; in that of the second, with the State; and, in that of the third, with a jury of doctors. Adjustment of the present law on abortion is probably inevitable in many countries, and those who seek the solution of the problem in the formulation of a sane compromise will find this presentation of divergent views well worth reading.

LIGHT TREATMENT FOR MASSEUSES

A BOOK designed to supply their need has been written by Dr. E. M. Anderson, who gives clearly information which is necessarily dogmatic. Granted that prolonged courses of actinotherapy are to be given by masseuses, without medical supervision of the patient at regular intervals, it may be necessary for the operator to be acquainted with the signs of the disease treated and to be able to estimate progress by reference to a text-book. But the supply of a clearly written dogmatic book on this subject for the use of masseuses [2] has its dangers. No one who has not had a general medical training should, except under constant medical supervision, treat cases showing definite deviation from the normal, whether of metabolic disorders, respiratory disorders, skin diseases, or even "chronic rheumatism." It is not enough to warn non-medical operators against treating tuberculosis in all its forms, for it is the undiagnosed case, the early phthisical patient, who is most likely to suffer

[3] Joan of Arc. By Milton Waldman. London: Longmans, Green and Co., Ltd. 1935. Pp. 331. 12*s*. 6*d*.
[4] Peter Porcupine. A Study of William Cobbett. By Marjorie Bowen. London: Longmans. 1935. Pp. 312. 10*s*. 6*d*.

[1] Abortion. By F. W. Stella Browne, A. M. Ludovici, and Dr. Harry Roberts. London: George Allen and Unwin, Ltd. 1935. Pp. 143. 4*s*. 6*d*.
[2] The Essentials of Light Treatment, for the use of Masseuses. By Elizabeth M. Anderson, M.D., B.S. Durh., Lecturer on Ultra-violet Rays to the School of Massage, Middlesex Hospital. London: Baillière, Tindall and Cox. 1935. Pp. 84. 5*s*.

if he is treated thus for wasting or for anæmia. Again, the chronic lumbago case may have an unrecognised renal lesion. Dr. Anderson has failed to point out these things with sufficient emphasis in her manual for masseuses. With this important reservation the book may be recommended to those who wish to become acquainted with the elements of actinotherapy. In the procedure recommended, preliminary "test-doses" are not insisted upon, before exposures of larger surfaces for treatment. They are, however, a simple means of estimating the patients' tolerance to some of the effects of ultra-violet treatment and avoid unpleasant accidents with very small trouble to the operator.

CHAMPION OF ANIMALS

SYMPATHY is curiously related to size. Down to a point, the smaller the animal the more it excites our kindness. "Dear little squirrel," we say to our children with conscious humanity. The claims of animals below a certain bulk, however, are apt to seem neligible; few say: "dear little earwig." Similarly, when animals become too large they stray beyond the scope of our affections. Some of us even find the horse an unpredictable creature and no one sympathises much with the hippopotamus. The University of London Animal Welfare Society, however, is concerned alike with great and small, and in this year's issue of the "Animal Year Book" (vol iii.) the claims of the musk-rat and the whale receive equal attention. Whales, indeed, were in grave danger of extermination, until the League of Nations convention for the regulation of whaling, of 1931, became international law in January of this year. The convention provides against the killing of calves and suckling whales, and requires that full use should be made of the carcasses of whales taken. These measures have come none too soon for we are told that:

"Four kinds of Right Whales, and the Pacific Grey Whale are all at vanishing point, the Sperm Whale and the Humpback are certainly found scattered sparsely throughout the oceans of the world, although they remain but a fraction of their former tens of thousands, whereas the Rorquals, after being decimated in northern waters, are now being slaughtered at the rate of thirty thousand per annum in the Antarctic."

This volume deals also with oil pollution of coastal waters which does much injury to sea-birds; with the use of electric anæsthesia (still in its experimental stages); with humane education; and with the lot of animals abroad. The account of work for the protection of animals in North Africa revolves about the almost legendary figure of Mlle. Ruperto. This lady, an Italian by birth, has, by astonishing evangelism and feats of courage, done much to improve conditions of life for donkeys, dogs, cats, and farm animals in Algiers, where she is now the secretary-general of a newly formed branch of the R.S.P.C.A. and has succeeded in making things difficult for the organisers of bull-fights.

We have commented before on the refreshing absence of sentimentality in the publications of the University of London Animal Welfare Society, and this volume comes well up to standard. The Fougasse cover of a fat man drawn by a diminutive straining donkey, as usual, touches the spot at the outset.

CONTRACEPTIVE METHODS

TWO small books [1] have recently been added to the rapidly increasing number of publications on contraception. Dr. White's book is full of facts, useful to those in search of propaganda in favour of birth control, which he has collected from numerous sources and set out in a readable way. The book would have been of more value if conflicting views and evidence had been weighed and discussed in a completely unbiased manner. Dr. White shows a tendency to suggest that birth control and sterilisation are the panaceas for most human ills.

Dr. Malleson's book is a manual on birth control methods, as used chiefly in the clinics in this country and by herself in general practice. It contains many valuable suggestions on how to deal with patients, and above all, gives the practical points on how to choose the correct cap and to teach women to use it. This is an aspect of the subject inadequately dealt with in many larger books, and for this reason as well as for its general good sense, Dr. Malleson's book is to be commended to practitioners wishing to familiarise themselves with sound contraceptive techniques and their application. In an appendix she gives a brief summary of the present position of the birth control movement in this country, and a list of voluntary clinics and of local authorities who have taken some action in the matter. She also supplies a list of reliable commercial products, pointing out (p. 64) that the list will need constant revision and that up-to-date information on sound contraceptives can always be obtained from the National Birth Control Association, 26, Eccleston-street, S.W.1.

[1] Birth Control and its Opponents. By Frank W. White, L.R.C.P. & S.E. London: John Bale, Sons and Danielsson Ltd. 1935. Pp. 164. 3s. 6d.
The Principles of Contraception. A Handbook for General Practitioners. By Joan Malleson, M.B., B.S. London: Victor Gollancz Ltd. 1935. Pp. 157. 4s. 6d.

THE CATECHISM SERIES

THOSE medical students who have been brought up from their earliest years to consult the Catechism as to their chief end (among other problems), and to memorise the official answers, may well have developed a conditioned reflex which leads them to a special appreciation of the question and answer type of book. The Catechism Series issued by Messrs. E. and S. Livingstone, of Edinburgh, at 1s. 6d. each, covers 27 subjects of the medical curriculum, alphabetically from anatomy to zoology. Many of the important subjects are divided into several parts; for example, five booklets each are allocated to medicine, pathology, and surgery, and six to anatomy. The most recent batch issued consists of histology, anatomy (Part III.), physiology (Parts III., IV., and V.). These little books are frequently revised and kept well up to date; some of them, whose subjects lend themselves fairly well to this method of revision, are in their fifth edition.

THE LIGHTER SIDE OF MEDICINE

THIS small book,[1] written in a humorous and vulgar style, will give entertainment to doctors as well as patients. Quoting Oliver Wendell Holmes, the author reminds us that "Mirth is God's Medicine," and argues that disease is apt to be regarded too solemnly by both doctor and patient. For this he holds the doctor chiefly to blame. "The invalid's day can be divided roughly . . . into two parts: (*a*) the period of blue funk and general wind-up prior to the meeting with the ogres; and (*b*) the aftermath of complete amentia and compelling thirst that follows it . . . ," the ogres, of course, being his medical advisers. He says quite sensibly, if not very originally, that it is the doctor's duty to correct mental perturbation in the patient and to remove silly fears; but is there any reason to suppose that this duty is not being constantly and fairly adequately performed? It must be remembered that the tempo of the consultation has to be set with some regard for the patient's state of mind, and the doctor must be tolerably sure that the disorder is a trivial one before he dare be light-hearted about it. Moreover, on the patient's side, the sense of humour tends to be in abeyance when pain is present, and he may find it anything but easy to obey the injunction to "smile, damn you, smile." With the author's belief in the therapeutic value of laughter and distraction there can be no disagreement, and it may be true that "an hour at the pictures may do us far more good than a week of intensive psychotherapy," though

[1] Laugh and Grow Fit. By the Laughing Leech. Author of "Say 99!" London: Frederick Muller Ltd. 1935. Pp. 133. 3s. 6d.

country practitioners of experience will not so easily be convinced that "the sting of a bee may cure the rheumatic joint." The rest of the book deals with the ordinary rules of healthy living, and contains nothing very new or striking though it is entertaining to read. The author seems to have an undue faith in the value of antiseptics, but his advice on how to examine a house, with a view to discovering whether or not it is a healthy habitation, is good and practical. There are some pleasant pen-and-ink sketches, illustrating points in the text, by Mr. Alfred E. Taylor.

INTELLIGENCE AND PSYCHOLOGICAL TESTS

FEW will deny that tests of intelligence, of performance, of specific aptitudes, and, to a lesser degree, of temperament, have already justified themselves in their application to educational work. For a time their use was restricted to the diagnosis of the subnormal, but to-day it is realised that a still more important problem for the educational and the vocational adviser is, in the words of a little book recently published,[1] the "discovery of unutilized aptitudes." The manual is designed to fill a recognised gap in the training of teachers which, while it includes usually some knowledge of general psychology, seldom provides guidance for practical application of psychological methods. It may be questioned, however, whether it is desirable, even if it were possible, to equip all teachers for psychological testing.

The personal equation of the examiner has been shown recently to play a large part in the marking of examination papers, an equation which may also vary with the mood of the moment, and, however foolproof psychological tests may be made, it seems essential that their application should be in the hands of persons with specialist knowledge and experience. It is difficult in any case to see how this book could be an adequate guide to teachers, for it is singularly incomplete. It gives minute instructions regarding certain essential preliminaries—winning the confidence of the child, tact, freedom from disturbance, good lighting, ensuring that the child is at ease physically and mentally, noting signs of fatigue—but there is no description of the tests, except for one or two examples; for the actual tests, recourse is necessary to other books in which similar preliminary instructions can be found. The manual assumes an ignorance on the part of its readers which, after 20 years or more of intelligence tests, seems difficult to credit; but if any teachers still exist who are unaware of the principles on which these tests are based, they will find here an introduction to this important subject.

ROSSIUM IN NARCOTIC ADDICTION

FURTHER information is forthcoming from America as to the therapeutic value claimed for Rossium (diphenylmethyl-pyrazolonyl) to which reference was made in THE LANCET of Sept. 14th (p. 624). Its use is based upon an anaphylactic theory of morphinism propounded by Dr. Ostromislensky and by its exhibition the distress which is apt to accompany the withdrawal of morphine is said to be alleviated. Moreover it is "now being used successfully in different types of alcoholism, such as acute and chronic alcoholism, delirium tremens, and alcoholic neuritis." The accompanying administration of sugar is said to aid its operation. Dr. Ostromislensky, who introduced rossium to the notice of the profession, regards this preparation as belonging to the group of so-called neurotropic substances and points to "astonishing results obtained in sciatica and in some cases of neuritis and herpes zoster." The drug is administered orally for six consecutive days in doses of 2 capsules every four hours, and the use of the offending narcotic—morphine, heroin, or alcohol—can, it is maintained, be safely discontinued after one or two days' treatment. Messrs. Coates & Cooper Ltd. (94, Clerkenwell-road, London, E.C.1) can supply enough of the drug for use in a few selected cases.

[1] The Teacher's Guide to Intelligence and Other Psychological Testing. By E. P. Allen Hunt, National Institute of Industrial Psychology; and Percival Smith, Vocational Guidance Officer, City of Birmingham Education Committee. London: Evans Bros., Ltd. 1935. Pp. 94. 1s. 6d.

THE BROAD STREET PUMP

Dr. H. B. Newham, Curator of the Museum, London School of Hygiene and Tropical Medicine, Keppel-street, W.C., writes: It will be recalled that in the cholera epidemic which was prevalent in London in 1854 the water from the pump in Broad-street, Golden-square, Soho, played a dramatic part in the dissemination of the disease. For museum purposes at this institution I am anxious to find a print or engraving showing this pump and its immediate surroundings, and I should be glad if any of your readers could give me information as to where such an illustration, if existent, could be found.

A PRESCRIBER'S LIST.—Messrs. Roberts and Co. (76, New Bond-street, London, W. 1) have brought out a fifth edition of this useful handbook to proprietary drugs of home and continental manufacture. In eight columns are given the name of the preparation, its maker, composition, form, size, price, indications, and dose. The list is more comprehensive than the previous editions, acknowledgment being made to 47 manufacturers and agents for their assistance in its compilation. A copy will be sent on request free of charge to any member of the medical profession.

Appointments

EDWARDS, COLIN, M.B. Sydney, D.P.M., has been appointed Registrar to the Out-patient Department of the West End Hospital for Nervous Diseases, London.

GHEY, P. H. R., M.B. Camb., F.R.C.S. Eng., Resident Surgical Officer to the Prince of Wales's Hospital, Plymouth.

MCLAUGHLIN, F. L., M.D. Irel., D.P.M., Hon. Clinical Psychologist to the Out-patient Department of the West End Hospital for Nervous Diseases, London.

MORRIS, Miss E., M.B. Lond., Resident Anæsthetic Registrar at the Hospital for Sick Children, Great Ormond-street, W.C.

RIDLEY, H., M.B. Camb., F.R.C.S. Eng., Hon. Consulting Ophthalmic Surgeon to the Royal Buckinghamshire Hospital, Aylesbury.

London County Council Hospital Staff.—The following appointments, promotions, and transfers are announced: A.M.O. (I.) and (II.) = Assistant Medical Officer, Grades I. and II. (T.) = temporary:—

HOWARD, R. N., M.D. Melb., F.R.C.S. Eng., M.C.O.G., A.M.O. (I.), St. James;

MORTON, T., M.D., M.R.C.P., A.M.O. (I.), Lewisham;

LIPSCOMB, J. F., M.B. Sydney, A.M.O. (I.), Downs Hospital for Children;

BENHAM, L. R., M.B. Melb., A.M.O. (I.), White Oak;

LLOYD, E. T., M.R.C.S. Eng., D.P.H., A.M.O. (I.), South Western;

LILLIS, W. J., L.R.C.P. Lond., A.M.O. (I.), Brook;

PAGET, M. Y., M.R.C.S. Eng., House Surgeon, St. Mary Abbots;

VALENTINE, W. H., B.A. Camb., M.R.C.S. Eng., House Physician, St. Mary Abbots;

DAX, E. C., B.Sc. Lond., L.M.S.S.A., House Physician, Lewisham;

BRADLEY, D. J., M.B. Dub., House Physician, St. Andrew's;

ROBERTS, B., M.R.C.S. Eng., House Physician, St. Andrew's;

KEITH, A. M., M.B., House Surgeon, Hackney;

THISTLETHWAITE, E. C., M.B., Visiting M.O. (T.), St. Margaret's;

BATSON, R. E., M.B. Edin., District M.O. (T.), Area III., District C (Finsbury);

WATSON, T. T. B., M.B. Camb., District M.O. (T.), Area VI., District B (Kensington);

WILLIAMS, H. V., M.R.C.S. Eng., District M.O. (T.), Area IV., District A (2) (Hampstead);

MCCLURE, C. R., M.R.C.S. Eng., District M.O. (T.), Area IV., District B (Marylebone);

FIELD, A. B., M.B. Camb., Senior A.M.O. (II.), St. Mary, Islington;

TAYLOR, I., M.B., D.P.H., Senior A.M.O. (II.), North Eastern;

CUNNINGHAM, A. A., M.D., D.P.H., Senior A.M.O. (II.), Park;

WORCESTER, R. G., M.D. Melb., M.C.O.G., A.M.O. (I.), St. Charles;

RAMSAY, I. S. W., M.B. Aberd., A.M.O. (I.), Downs Hospital for Children;

WILLIAMS, E. C. P., M.R.C.S. Eng., D.P.H., A.M.O. (I.), King George V. Sanatorium; and

O'CONNOR, A. J., M.B. Dub., D.P.H., A.M.O. (I.), Grove.